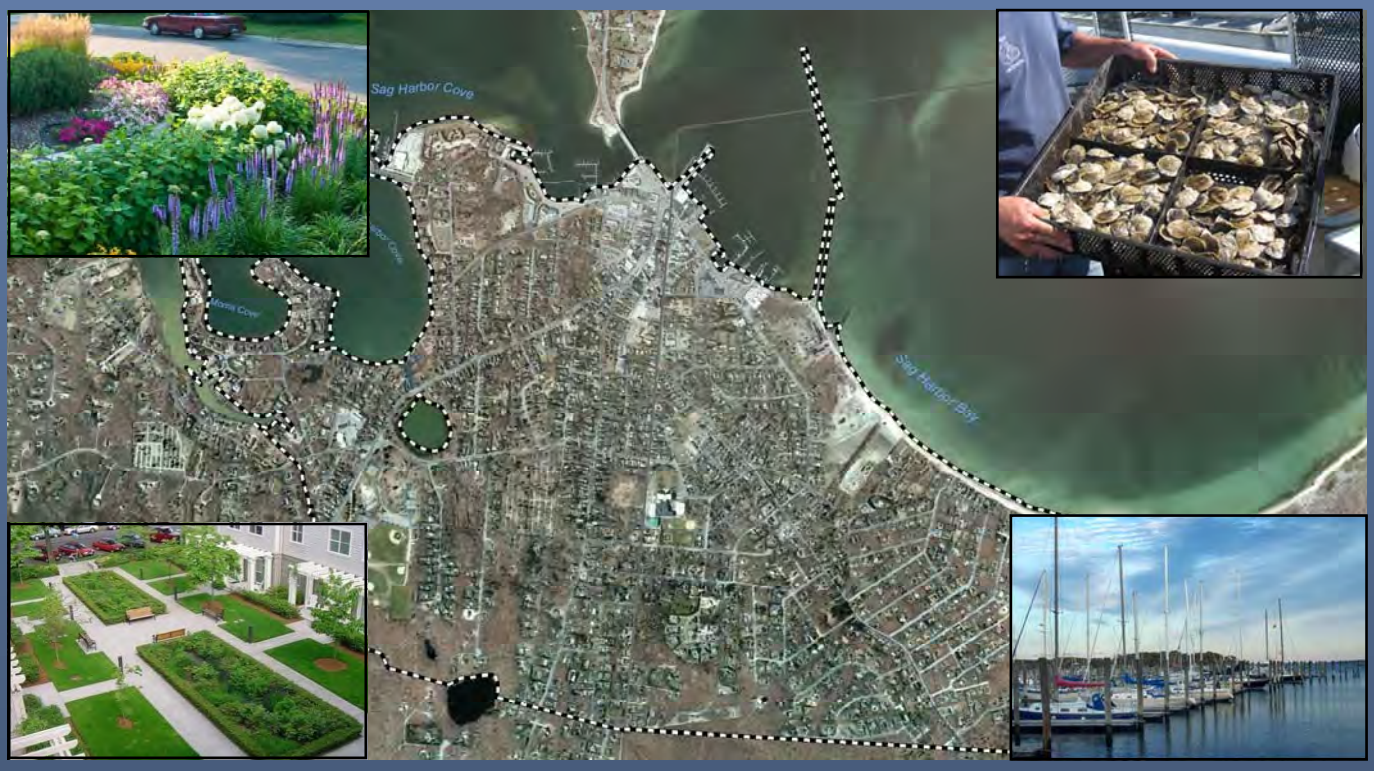
Water Quality Improvement Project Plan

Village of Sag Harbor

Town of Southampton & Town of East Hampton
Community Preservation Fund



Prepared for:
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and
Town of Southampton Town Board
Town of East Hampton Town Board

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August 19, 2016

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for

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1.0 Introduction

Situated about 95 miles east of New York City, the Village of Sag Harbor is an historic incorporated Village with a traditional maritime character. The Village straddles the Towns of Southampton and East Hampton. Comprised of a total land area of 1.72 square miles and a total water area of 0.75 square miles, about 60% of the Village lies in the Town of Southampton and 40% is in the Town of East Hampton. The Village's population as of the 2010 census was approximately 2,169.

The Village was settled in the early 1700s. By 1789 it had become a bustling whaling port. Today the Village of Sag Harbor enjoys a vibrant local economy that continues to rely on its coastal resources, which provide abundant seasonal tourism and recreational revenues, as well as aesthetic qualities that rival those elsewhere on Long Island's east end. Its boundaries on the east and west are defined by Little Northwest Creek and Ligonee Brook respectively. The Village's shoreline includes frontage along several surface waterbodies which also include Sag Harbor Cove, Morris Cove, Sag Harbor, and Sag Harbor Bay **(Figures 1 thru 4; Aerial Photograph, Surface Water Resources, NYSDEC Wetlands, and National Wetlands Inventory).**

2.0 Purpose and Need

As the Village and neighboring areas have developed and matured, stormwater and other pollutants have increased **(See Figure 5, Priority Waterbodies List).** As a result, areas previously open to shellfish harvesting are now closed and nitrogen and pathogens water quality impairments have resulted in the adoption by the New York State Department of Environmental Conservation (NYSDEC) of nitrogen and pathogens pollutant discharge limits known as Total Maximum Daily Loads (TMDLs) for Peconic Estuary waterbodies, including Sag Harbor. The NYSDEC has imposed MS4 pathogens TMDL load reductions, the latest draft of which calls for a 64% reduction in pathogens from municipal storm sewer system discharges to Sag Harbor **(See Figure 6 DEC Draft MS4 Pathogens TMDL Retrofit Area).**

Sag Harbor is fortunate and unique in having its own Wastewater Treatment Facility (WWTF); however, this primarily serves downtown commercial areas in the heart of the north end of the Village. **(See Figure 7, Sewered Areas Map)** Most of the Village is not served by sanitary sewers. Since Sag Harbor land use is based on historic settlement patterns, many lots do not conform with current lot size and overall density requirements recognized today as being necessary for groundwater and surface water protection. With many small developed lots in proximity to TMDL waterbodies and in high groundwater areas (**See Figure 8, Water Table Contours)**, it is likely that on-site sanitary treatment systems are contributing to local water quality impairments (**See Figure 9 , Lot Size Map).** Recently, Suffolk County groundwater and surface water impairments caused by on-site sanitary systems have been well documented by Suffolk County Department of Health Services (SCDHS) and Stony Brook University researchers. In addition, portions of the Village are under threat of flooding and storm surge

Addressing poorly functioning septic systems and stormwater runoff are top priorities for the Village of Sag Harbor. Drainage improvement projects, including bioretention and

infiltrative/treatment practices, will improve water quality, as will on-site sanitary system upgrades, new alternative systems that mitigate groundwater outflows of pollutants to local marine waters and potential for expansion of the areas served by the Village WWTF.

Support for the Towns of East Hampton and Southampton Community Preservation Fund (CPF) November 2016 voter referendums and Water Quality Improvement Plans (WQIPs) is of great importance to the Village of Sag Harbor. The Village has adopted a resolution and provided letters of support to both Towns with respect to this important initiative. (See **Attachment A**) These letters indicate Sag Harbor's commitment to water quality protection and restoration wherever possible and further established the understanding that the Village would provide this more detailed WQIPP to identify resources on a local level, and provide more specific information on projects to achieve the goals of this plan.

Assessment of local land use and water resource conditions has been initiated in order to facilitate efficient coordination between the Village and the Towns in addressing shared water quality impairments. Sag Harbor is situated in a critical location on Peconic Bay, between the two Towns, along areas with impaired water body status, and in a Village where historic settlement patterns would benefit from implementation of best management practices for stormwater and wastewater management. Sag Harbor would like to express that there is much to be gained that would benefit both Towns and particularly regional resources, recreational use and economic stability of maritime activities, by the funding of water quality improvement projects in the Village of Sag Harbor.

It is the purpose of this plan to provide a basis for, and description of, the East Hampton Town and Southampton Town water quality improvement projects within the Village of Sag Harbor for which CPF funding will be sought if the voter referendums are successful.

3.0 Village of Sag Harbor Water Resource Protection

The quality of life and activities provided by the Village's water resources are highly valued by its residential and business communities. In recognition of the need to protect its character and to balance economic development with environmental preservation, the Village has been successful in accomplishing several important objectives, which include establishment of a Wetland Permit Program, adoption of a Local Waterfront Revitalization Plan (LWRP) (1986; amended 2006) and adoption of a Harbor Management Plan (1998). The Village is in the process of finalizing extension of it harbor jurisdiction from 1500 feet to 4500 feet from shore **(See Figure 10 Nautical Chart).** Village Code Chapters 275, 278 and 285 implement the LWRP Waterfront Consistency Review, Waterways management, and the Wetland Permit Program, respectively. Uniquely, the Village constructed its own wastewater treatment plant on Bay Street in the early 1970's. The plant serves a small portion of the Village, primarily comprised of the business district **(See Figure7 Sewered Areas Map).** It was first designed as an extended aeration process plant, using chlorine to kill bacteria before entering the bay. The plant has since been upgraded to a sequential batch reactor system (SBR), which processes the effluent using an ultra-violet light system to reduce bacteria prior to outflow.

To promote upgrades of residential substandard sanitary systems constructed prior to 1981, in

2014 the Sag Harbor Board of Trustees established a partial rebate program through the adoption of Local Law No. 10-2014 Chapter 219, "Septic System Rebate and Incentive Program".

In 2003, Sag Harbor Village began implementing its MS4 stormwater management program. Chapters 230 and 232 of the Village Code address Storm Sewers and Stormwater Management, respectively. As a result, the Village has advanced measures to reduce its discharges of TMDL pollutants (nitrogen and pathogens) and to educate the public concerning runoff pollutants, to address the impacts caused by development, and to reduce the contaminants generated by its facilities and operations. An active participant in informing Peconic Estuary Program initiatives, the Village joined the Towns of East Hampton and Southampton and other Town, County, Village, and State partners in formalizing the inter-municipal Peconic Estuary Protection Committee (PEPC) in 2015 in order to leverage funds and technical resources in pursuit of joint water quality initiatives.

4.0 Physical Characteristics and Natural Resources

The Village of Sag Harbor's lowest topographic elevations occur along its extensive shorelines and northeastern boundary, where shallow depth to groundwater is also evident **(See Figures 11-13, Topography, Topographical Contours, and Depth to Water Table).** Greater than 50% of the Village lies within the 0-2 year groundwater contributing area to local surface waterbodies **(See Figure 14, Groundwater Contributing Area Map).** The Village is prone to flooding during severe rain events and it sustained extensive long-term damage as the result of Superstorm Sandy in 2012 **(See Figures 15 & 16, FEMA Map and SLOSH Map).**

Surface waters and wetland areas in the Village, as noted above, include Upper, Inner and Outer Sag Harbor Cove, Morris Cove, Ligonee Brook, Sag Harbor, and Sag Harbor Bay. In addition, The Village's Otter Pond, part of an environmentally sensitive nine-mile trail that inter-connects ponds, woods, and wetlands in the Town of Southampton, receives tidal flow through a channel that connects it with Upper Sag Harbor Cove **(See Figure 17 Surface Watersheds Within the Village).**

5.0 Zoning, Land Use and Groundwater Management Zones

The Southampton Town and East Hampton Town areas of the Village are divided by Division Street, with Southampton to the west and East Hampton to the east. With a majority of its area developed with residential uses, the Village also hosts a 23.4-acre Business District that includes the waterfront along the northern edge of the district.

Article 6 of the Suffolk County Sanitary Code (SCSC) established Groundwater Management Zones to create lot size limitations for restrictions on density of use in unsewered areas. Sag Harbor includes GMZ IV, located nearer the shoreline and requiring lot areas of at least 20,000 square feet (SF) in size, and GMZ V, located more inland and requiring lot areas of at least 40,000 SF **(See Figure 9, Lot Size Map)**. Article 6 of the SCSC was adopted in 1980, so lots legally created or developed prior to that date are exempt and can be utilized under certain provisions as provided for in Article 6. Within the Village of Sag Harbor there are 535

developed parcels that are less than 40,000 square feet (SF) in area, located within Groundwater Management Zone V outside of sewered areas. Of these parcels, in GMZ V, there are 357 in Southampton and 178 in East Hampton. There are also 1,048 parcels of less than 20,000 SF in size in unsewered areas of GMZ IV within the Village. Of these parcels, in GMZ IV, there are 424 in Southampton and 624 in East Hampton. **Table 1** is provided below to present this parcel inventory.

Table 1
Unsewered Developed Parcels Less than Lot Sizes per SCSC Article 6

Town Location	GMZ IV Parcels Developed/Unsewered	GMZ V Parcels Developed/Unsewered	Totals
Southampton	424	357	**781**
East Hampton	624	178	**802**
Totals	**1,048**	**535**	**1,583**

This inventory provides an identification of an important opportunity to better manage wastewater discharge in the Village. Existing developed parcels, outside of sewered areas that are less than lot size per SCSC Article 6 would be candidates for installation of upgraded and/or alternative sanitary systems, or potential expansion of sewering. Any such improvements would reduce nitrogen loading to groundwater. When considering from a prioritization standpoint, those parcels in GMZ IV, nearest the shoreline could be considered priority locations. This would include 424 parcels in Southampton and 624 parcels in East Hampton. GMZ V parcels would also be important for alternative system/upgrades and are more distant from existing sewered areas. This would include 357 parcels in Southampton and 178 parcels in East Hampton. Recommendations provided in Section 8.0 will take this into consideration.

There are various publicly owned lands that may present opportunities for infrastructure and stormwater improvements and are notable based on established municipal uses in the Village **(See Figure 18, Publicly Owned Lands Map).** As depicted on the map, publicly owned lands of approximately 250 acres are owned by the U.S. Postal Service, New York State, Suffolk County, the Towns of East Hampton and Southampton, and the Village.

6.0 Depth to Groundwater and Water Supply

Using the topographic elevations and groundwater elevations, a depth to groundwater map was prepared for the purpose of this assessment. The map has been further analyzed to identify those parcels in GMZ IV that are developed, unsewered, and are less than 20,000 SF in size. These are considered high priority parcels for potential sewer district expansion and/or sanitary system upgrades or alternative sanitary system installation. The following table identifies the number of parcels that are part of this inventory, that fall within each of the Towns **(See Figure 19, High Priority Parcels)**.

Table 2
Unsewered Developed Parcels Less than Lot Sizes per SCSC Article 6
And in Areas with Less than 10 feet to Groundwater

Town Location	GMZ IV Parcels Developed/Unsewered
Southampton	72
East Hampton	169
Totals	**241**

These parcels include those listed in **Table 1** that are in areas with groundwater at a depth of less than 10 feet, thus, there is some overlap in the inventory. Nevertheless, these high priority parcels provide an important ranking consideration.

Consistent with the water quality improvement plans of the Towns of Southampton and East Hampton, the Village of Sag Harbor has areas that are not currently served by public water, and considers these areas to be priority parcels as well. As inventory information is advanced, the Village plans to identify these parcels and include them in further prioritization recommendations when considering lot size, Article 6 conformance and depth to groundwater.

7.0 Infrastructure

Roads: Principal access roads into the Village include the Easthampton-Sag Harbor Turnpike, New York State Route 114, and County Route 79.

Storm sewer system: The Village operates a municipal separate storm sewer system with 17 outfalls to surface water bodies. Comprised of storm sewer pipes as well as streets and channels, the Village's storm sewer system includes several road ends that contribute direct runoff into surface waters.

Wastewater treatment: As noted above, the Village built its own wastewater treatment plant on Bay Street over 40 years ago. The SBR facility, with a 0.25 (MGD) design flow, provides tertiary treatment and discharges to Sag Harbor. It primarily serves the business district. The remainder of the Village relies on cesspools and septic systems for on-site sanitary wastewater treatment **(See Figure 7, Sewered Areas Map).**

8.0 Recommendations

Building on the achievements of the Towns in developing their CPF Water Quality Improvement Plans, the Village has completed water resource mapping; including watersheds, sewered areas, groundwater contributing areas, depth to water table, wetlands, impaired water bodies, and areas of substandard lots, to facilitate analysis of water quality improvement project potential and benefits.

A number of diverse opportunities to address the East Hampton Town and Southampton Town

groundwater and surface water quality impairments caused by polluted stormwater and inadequate wastewater treatment in Sag Harbor Village have been preliminarily identified, including within Southampton Town CPF WQIPP priority areas **(See Figure 20 Southampton CPF Village of Sag Harbor Priority Areas)** and portions of the Village located in the Town of East Hampton as incorporated into that Town plan.

The following presents a comprehensive scope of conceptual water quality improvement projects that are designed to address NYSDEC MS4 TMDL regulatory requirements and to reduce, remediate and restore the health of shared Town and Village water resources in the Sag Harbor watershed. Included are: on-site sanitary system upgrades and alternative sanitary waste treatment systems, potential increased wastewater treatment plant access, green infrastructure, drainage improvement projects, and water quality treatment practices **(See Figure 21: Preliminary Recommended Water Quality Improvement Projects).** Prepared as a formative and dynamic document, the Village anticipates that its WQIPP objectives will be refined as ongoing evaluation of the means to achieve optimal water quality improvements progresses.

A. Wastewater Treatment

1. *On-Site Sanitary Wastewater Treatment Upgrades*: Coordinate with SCDHS and the Towns of East Hampton and Southampton in providing support to property owners located in priority areas within the Village for septic system and cesspool upgrades and potential alternative system installations. Highest priority areas include developed, unsewered parcels, within GMZ IV **(See Figure 19 High Priority Parcels),** that are both less than 20,000 SF in size, and less than 10 feet to groundwater **(See Table 2, Section 6.0).** Secondary priority parcels would be developed, unsewered parcels of less than 20,000 SF in GMZ IV, and lower priority parcels would be developed, unsewered parcels of less than 40,000 SF in GMZ V. (**See Figures 7, 13, 14, and 19); Table 1; Section 5.0)** The Village already has Village Code, Chapter 219 as a mechanism for funding implementation of sanitary upgrades.

   The Suffolk County Department of Health Services (SCDHS) has initiated a pilot program to evaluate a variety of alternative on-site sanitary wastewater treatment systems. The general piloting approval phase of the Suffolk County Innovative/Alternative Onsite Wastewater Treatment Systems Program (I/A OWTS) is ongoing. Six different system types were installed in summer 2015. The results of system testing, and approval by Suffolk County, are anticipated by the end of 2016. Suffolk Sanitary Code amendments are under development.

   Consistent with the water quality improvement plans of the Towns of Southampton and East Hampton, the Village of Sag Harbor has areas that are not currently served by public water, and considers these areas to be priority parcels as well.

2. *Potential Expansion of Sag Harbor Wastewater Treatment Facility District*:

Conduct feasibility study to determine the advisability of extending the area served by the WWTF. The plant is currently operating below capacity. Consideration could be given to offering connection to facilities already proximate to the District. Nearby businesses with high wastewater flows on small parcels and/or with shallow depth to groundwater could be considered for connection. Potential for providing sewage treatment for residential parcels with shallow groundwater and small lots could also be examined (**See Figures 7 13, 14, and 19).** A feasibility study would be appropriate to finalize priority areas, determine wastewater flows, provide a basis for expansion areas, and to outline the process and permits needed to implement the expansion.

(**Please note:** NYS Law Chapter 551, which provides for use of CPF revenues, indicates that wastewater treatment improvement projects includes the planning, design, enlargement, extension, or alteration of a wastewater treatment facility.)

B. Stormwater/Green Infrastructure Improvements

Drainage Retrofits: Install stormwater mitigation and treatment projects in priority areas within the Village, including: dry wells, raingardens, parking lot islands, tree trenches, pervious pavement and leaching systems. Many of these practices are identified in terms of best management practice guidelines for green infrastructure and stormwater improvements **(See Attachment B, Recommended Green Infrastructure and Stormwater Conceptual Design Guidelines)**.

A preliminary assessment of the Village has been conducted to identify specific improvement projects within the Village. Ten (10) potential projects have been recommended within the Town of East Hampton, and sixteen (16) in the Town of Southampton, for a total of twenty six (26) projects that are listed below. **Figure 21, Recommended Water Quality Improvement Projects,** provides the general location of each of these projects. **Attachment C, Preliminary Project Locations and Diagrams,** includes preliminary project locations and designs for each of the stormwater or green infrastructure improvement projects. Additionally, supporting information including: project identification; location; preliminary contributing area, volume information and water quality benefit, and preliminary costs, is outlined in **Attachment D, Recommended Project Identification and Water Quality Data**.

Table 3
Town of East Hampton
Recommended Water Quality Improvement Projects

TOWN OF EAST HAMPTON	
Project #	**Description**
EH-1	3,920 SF Pervious Pavement of two parking lanes on the north side of Bay Street in front of Marine Park Drive. The practice will enhance drainage during large storm events and reduce runoff pollutants on Bay Street.
EH-2	2,613 SF Pervious Pavement of a parking lane on the north side of Bay Street in front of Sag Harbor Yacht Club. The practice will enhance drainage during large storm events and reduce runoff pollutants from Bay Street.
EH-3	3,049 SF Tree Trench located along the water front of Marine Park Drive. The practice will reduce runoff pollutants from Marine Park Drive and surrounding parking lots.
EH-4	1,306 SF Tree Trench located in the grass strip between the north side of Bay Street and the sidewalk. The practice will enhance drainage during large storm events in conjunction with the pervious pavement and will reduce runoff pollutants from Bay Street and Marine Park Drive.
EH-5	720 SF Raingardens on two locations along Marine Park Drive. The practices will reduce runoff pollutants from Marine Park Drive and surrounding parking lots.
EH-6	2,000 SF Raingarden located in the grass median on the east side of Rysam Street and south of Bay Street. The practice will provide water quality treatment to runoff prior to entering the catch basins along Rysam Street. The raingarden will reduce runoff pollutants from Rysam Street.
EH-7	7,500 SF of multiple Raingardens within the ROW of Bay Street. They will provide water quality treatment and reduce runoff pollutants from Bay Street.
EH-8	4,500 SF of multiple Raingardens within the ROW of Hempstead Street. They will provide water quality treatment and reduce runoff pollutants from Hempstead Street.
EH-9	3,000 SF of Raingardens located in three to four locations along Havens Beach Road. The practices will reduce runoff pollutants from Havens Beach Road and associated parking lots.
EH-10	2,500 SF of multiple Raingardens within the ROW of Terry Drive and Cadmus Road. They will provide water quality treatment and reduce runoff pollutants from these two streets.

Table 4
Town of Southampton
Recommended Water Quality Improvement Projects

TOWN OF SOUTHAMPTON	
Project #	**Description**
SH-1	3,600 SF of multiple Raingardens within the ROW of Long Island Avenue. They will provide water quality treatment and reduce runoff pollutants from Long Island Ave.
SH-2	2,800 SF Stormwater Wetland to be installed adjacent to the existing wetland along Spring Street on Village property. The stormwater wetland will enhance flood storage and reduce runoff pollutants from Spring Street.
SH-3	3,000 SF Bioretention basin to be installed in the median of Main Street which will also provide separation of the lanes and safer pedestrian crossing. The bioretention will reduce runoff pollutants from Main Street.
SH-4	3,000 SF Bioretention basins and Pervious Pavement at the public parking facility at Meadow and Nassau Streets. These practices will help reduce flooding and reduce runoff pollutants from the public parking lot.
SH-5	6,500 SF of multiple Raingardens within the ROW of Glover Street. They will provide water quality treatment and reduce runoff pollutants from Glover St.
SH-6	3,900 SF Bioretention basins and Pervious Pavement at the Village property along east side of Columbia Street. These practices will help reduce flooding and reduce runoff pollutants from the parking lot.
SH-7	3,000 SF Road-end Filtration basin at the end of Green Street to prevent direct runoff into Upper Sag Harbor Cove.
SH-8	1,200 SF Bioretention basins and Tree Trenches at the parking lot median of Wharf Street. These practices will reduce runoff pollutants from the parking lot.
SH-9	1,700 SF Bioretention basins and Tree Trenches at the parking lot median, south side of W. Water Street and associated parking lots. These practices will reduce runoff pollutants from the street and parking lot.
SH-10	700 SF Bioretention basins and Tree Trench at the public parking facility at Division and Washington Streets. These practices will reduce runoff pollutants from the public parking lot.

Table 4 (Continued)
Town of Southampton
Recommended Water Quality Improvement Projects

TOWN OF SOUTHAMPTON	
Project #	**Description**
SH-11	2,100 SF of Raingardens and a Road-end Filtration system within the ROW of Cove Road. They will provide water quality treatment and reduce runoff pollutants from Redwood and Cove Road.
SH-12	2,300 SF of Raingardens and a Road-end Filtration system within the ROW of Amherst Road. They will provide water quality treatment and reduce runoff pollutants from Redwood and Amherst Road.
SH-13	1,000 SF of a Road-end Filtration system within the ROW of the road-end of John Street. The filtration system will provide water quality treatment and reduce runoff pollutants from John Street.
SH-14	4,800 SF Bioretention basins, Raingardens and Road-end Filtration system along Oakland Avenue, Somers Place and White Street. These practices will provide water quality treatment and reduce runoff pollutants along all three streets directly draining to Otter Pond.
SH-15	3,300 SF of multiple Raingardens within the ROW of Joels Lane. They will provide water quality treatment and reduce runoff pollutants from Joels Lane.
SH-16	2,900 SF of multiple Raingardens within the ROW of Archibald Way. They will provide water quality treatment and reduce runoff pollutants from Archibald Way.

9.0 Conclusion

Water quality protection and restoration on Long Island has reached the highest level of priority for New York State government, for the Peconic Estuary Program, for the Suffolk County Department of Health Services and for local government. Today, Long Island's East End Towns are moving forward with clear momentum and are leading with unprecedented resolve. They have taken actions to ensure that measurable water resource protection goals are achieved and sustained over the long term. The Village of Sag Harbor applauds the efforts of the Town of Southampton and the Town of East Hampton for their success in offering the Community Preservation Fund Water Quality Improvement Projects (CPF WQIP) amendment on the ballot for voters this November, and for developing innovative CPF Water Quality Improvement Project Plans that will guide efficient and effective use of those funds for years to come. The Village stands ready to work with its Peconic municipal partners in addressing our most pressing water quality issues. The Village remains hopeful and confident that the voters will approve the CPF WQIP amendments, and looks forward to working with the Towns on important water quality improvement projects within the Village through this future revenue source, in order to achieve the water quality restoration that will benefit local and regional resources and economies, particularly as related to our precious beaches, fisheries, bays and harbors.

FIGURES

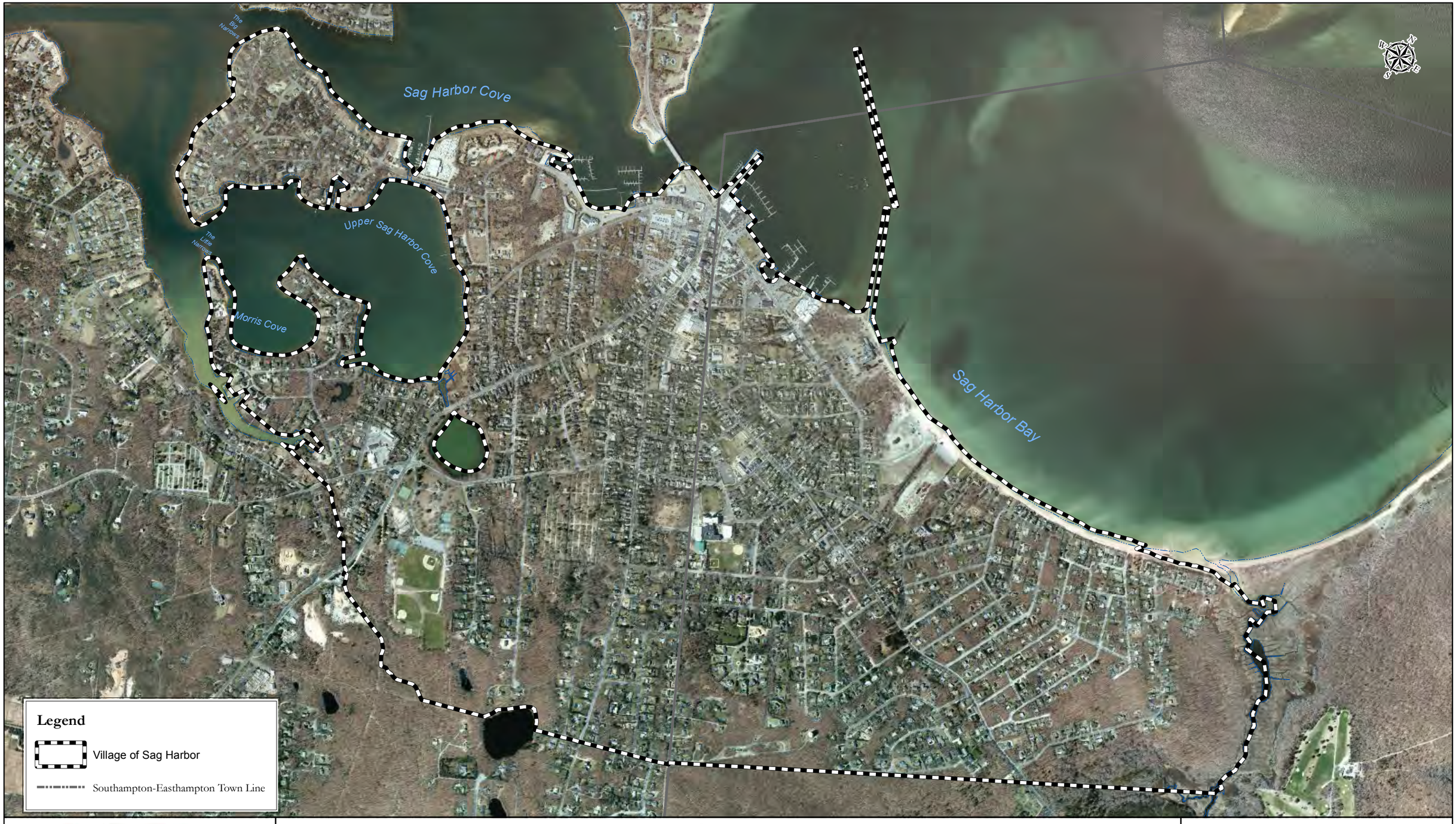

FIGURE 1
AERIAL PHOTOGRAPH

Source: NYSGIS Orthoimagery Program, 2013
Scale: 1 inch = 1,000 feet

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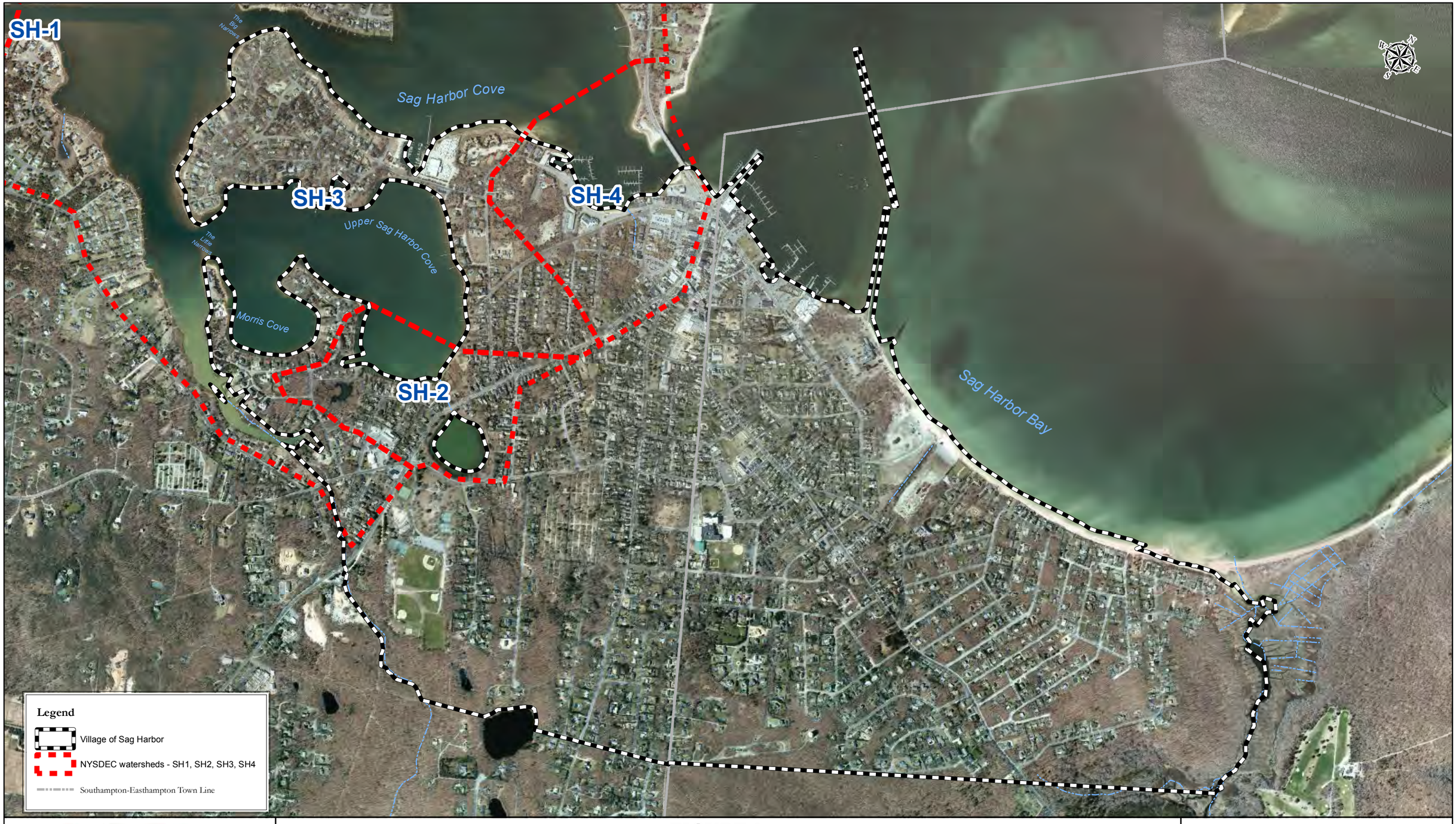

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FIGURE 2
NYSDEC SURFACE WATER PRIORITY AREAS

Source: NYSGIS Orthoimagery Program, 2013; NYSDEC Draft MS4 Pathogen TMDL Retrofit map
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

FIGURE 3
NEW YORK STATE DEC WETLANDS

Source: NYSGIS Orthoimagery Program, 2013; NYSDEC Fresh & Tidal Wetlands
Scale: 1 inch = 1,000 feet

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FIGURE 4
NATIONAL WETLANDS INVENTORY

Source: NYSGIS Orthoimagery Program, 2013; NWI from USF&W Service
Scale: 1 inch = 1,000 feet

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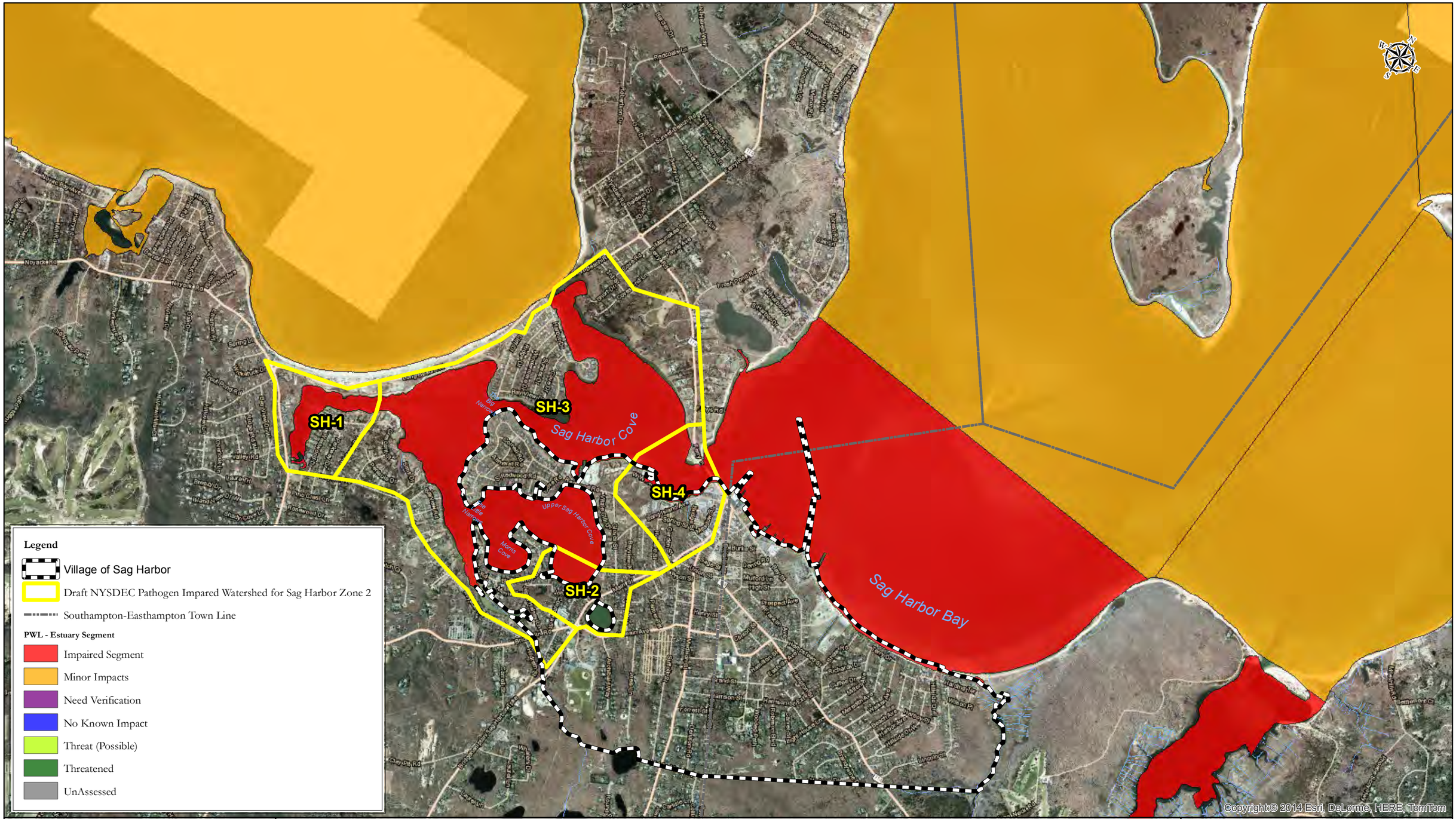

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FIGURE 5
PRIORITY WATERBODY LIST

Source: NYSGIS Orthoimagery Program, 2013; NYSDEC; Pathogen Impared Waterbodies for Sag Harbor, May 2016
Scale: 1 inch = 2,000 feet

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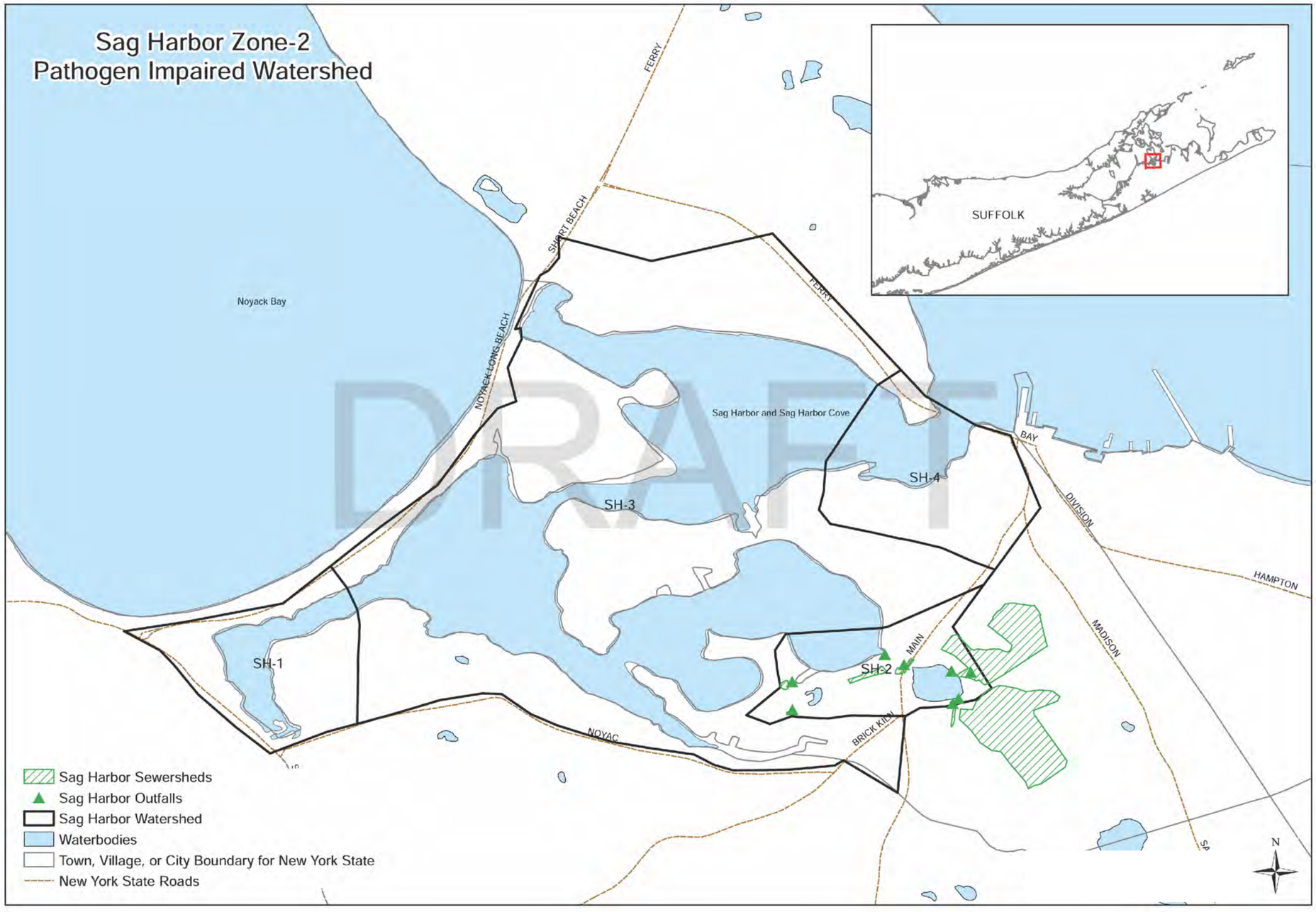

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FIGURE 6
DEC DRAFT MS4 PATHOGENS TMDL RETROFIT AREA MAP

Source: NYSDEC
Scale: not to scale

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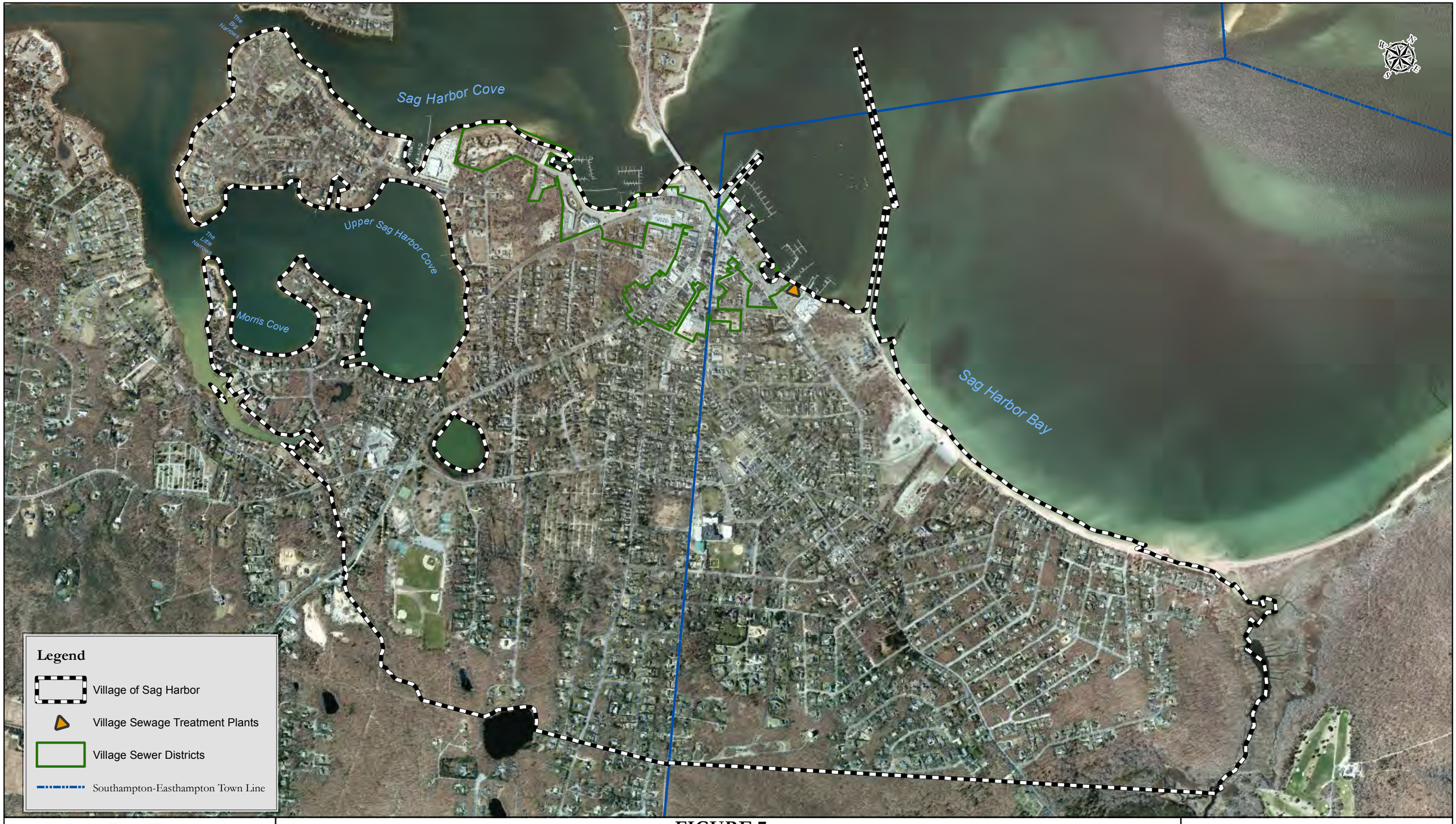

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FIGURE 7
SEWERED AREAS

Source: NYSGIS Orthoimagery Program, 2013; SCDHS
Scale: 1 inch = 1,000 feet

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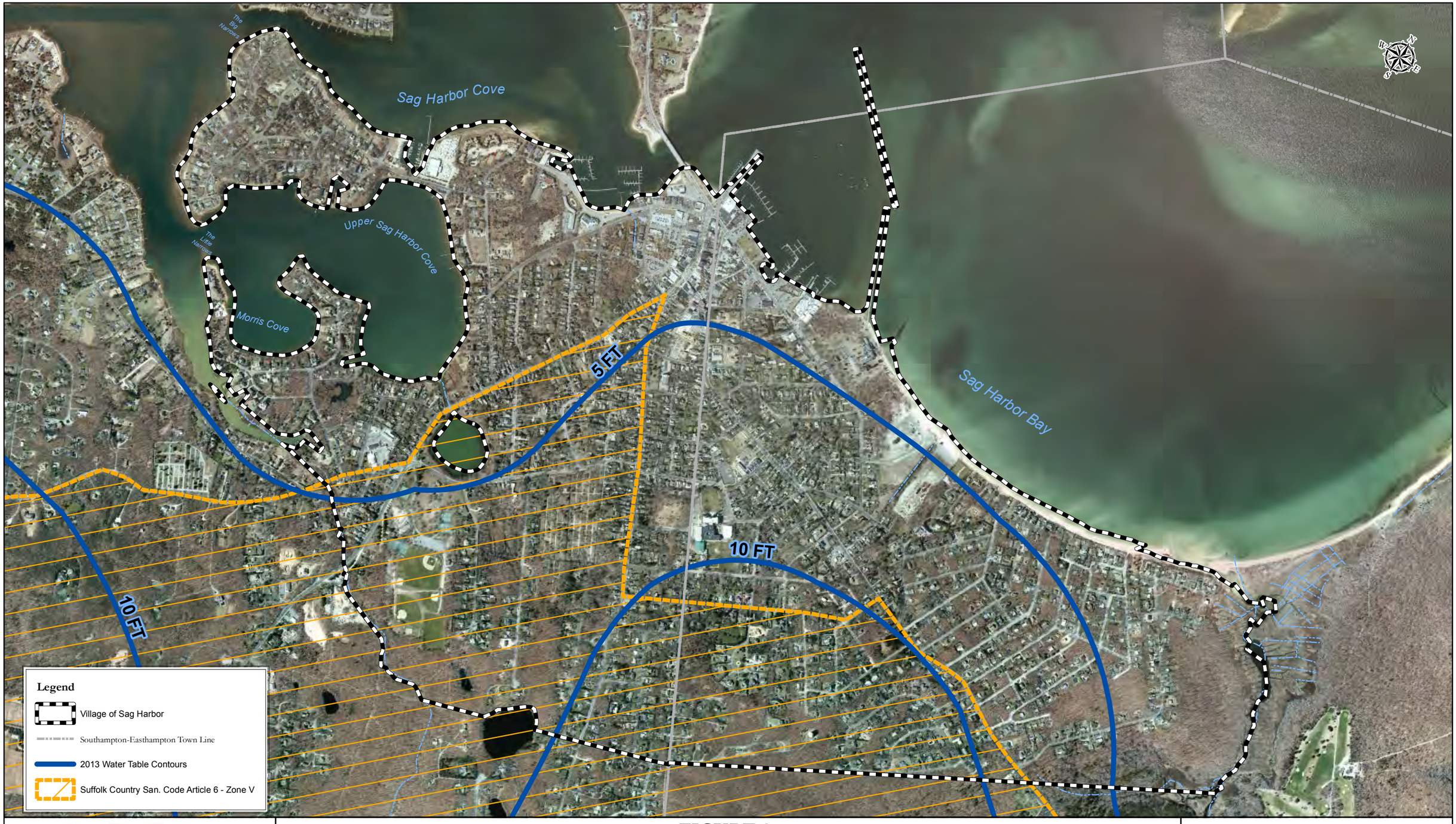

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FIGURE 8
WATER TABLE CONTOURS

Source: NYSGIS Orthoimagery Program, 2013; SCDHS; Water Table from USGS 2013 data release, SIM 3270, 2010 data
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

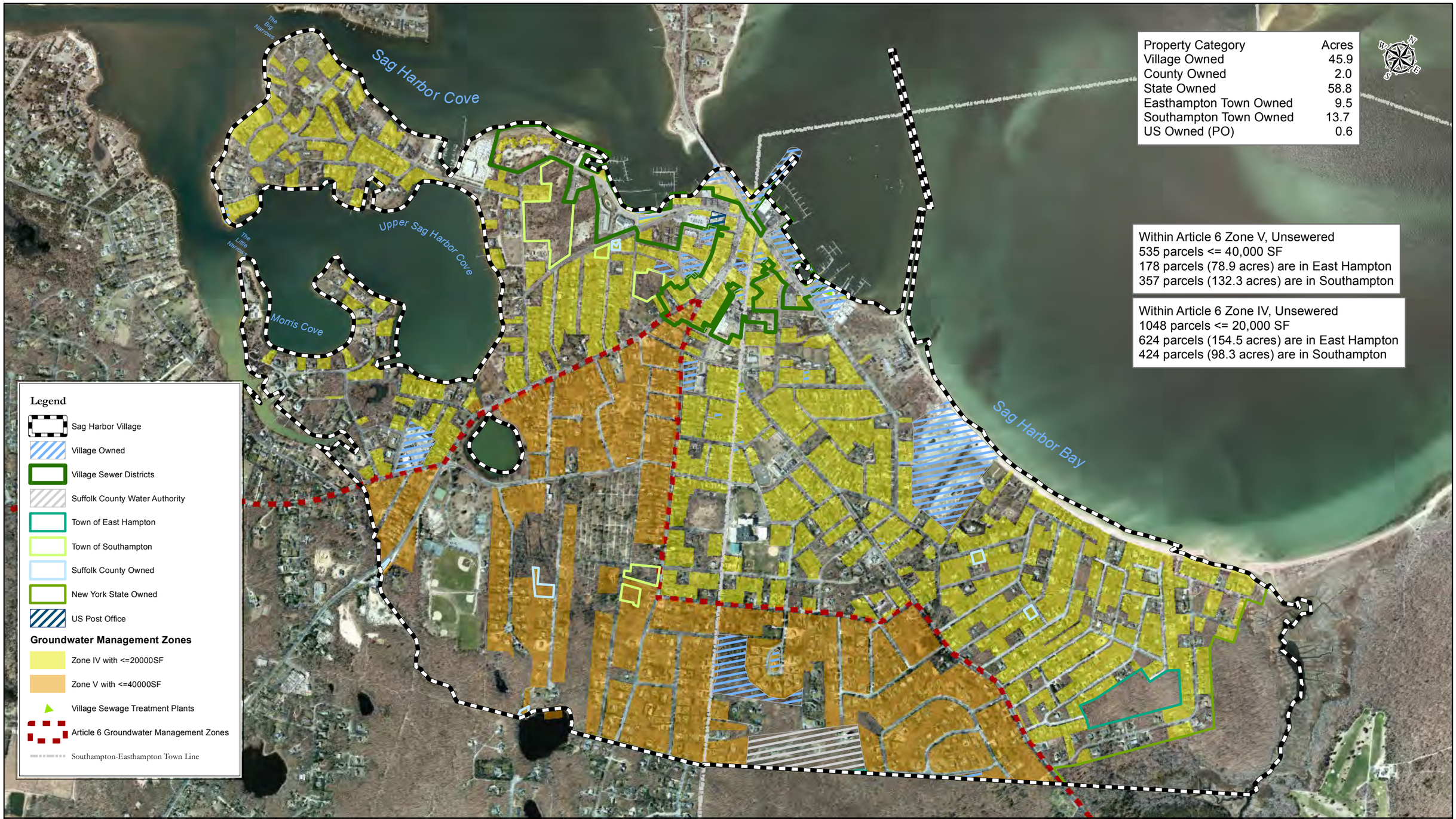

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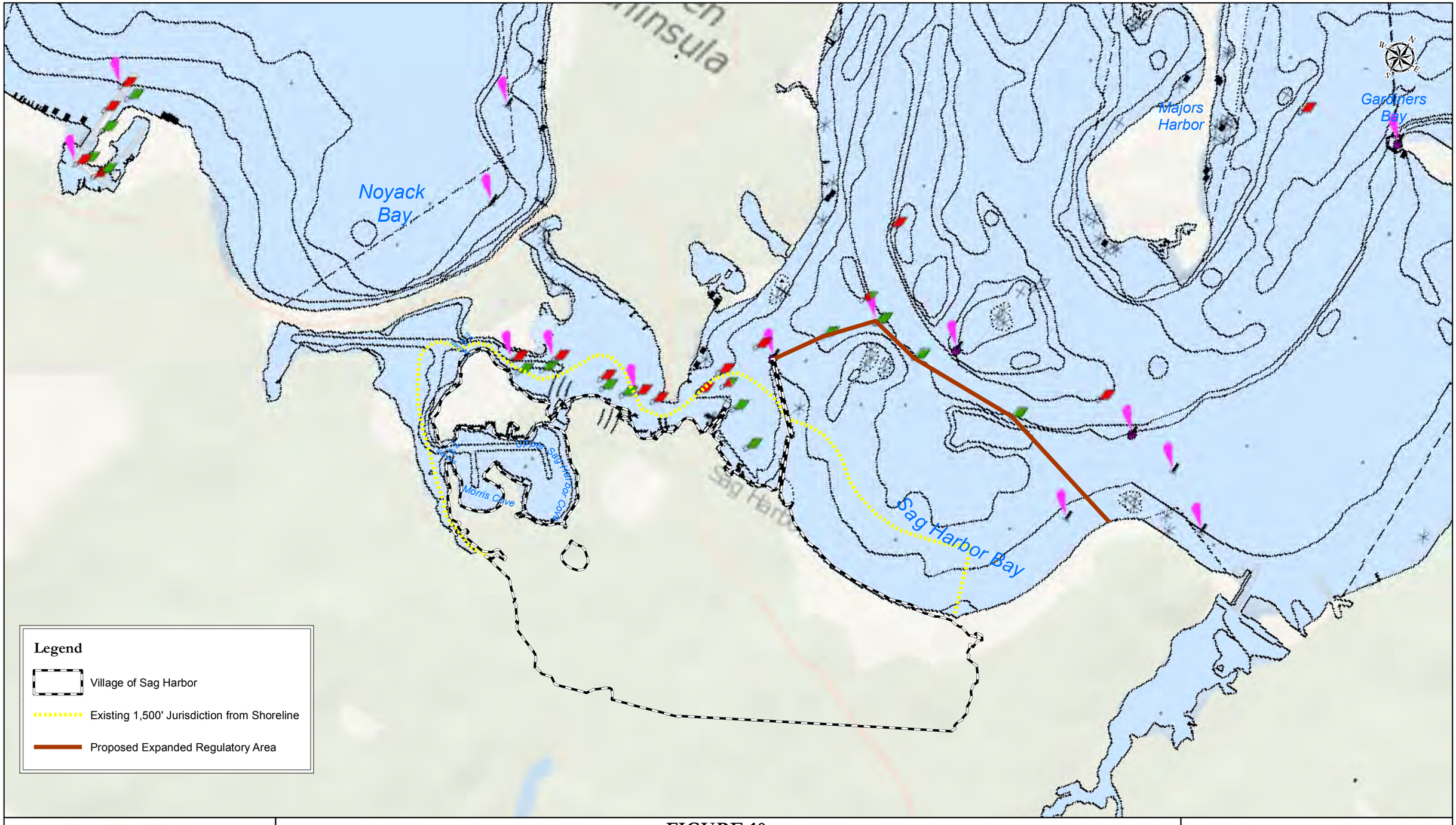
FIGURE 9
LOT SIZE MAP

Source: NYSGIS Orthoimagery Program, 2013; Village of Sag Harbor; SCDHS - Article 6 Sanitary Code
Scale: 1 inch = 1,000 feet

Village of Sag Harbor



NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

FIGURE 10
NAUTICAL CHART

Source: NOAA
Scale: 1 inch = 2,000 feet

Village of Sag Harbor

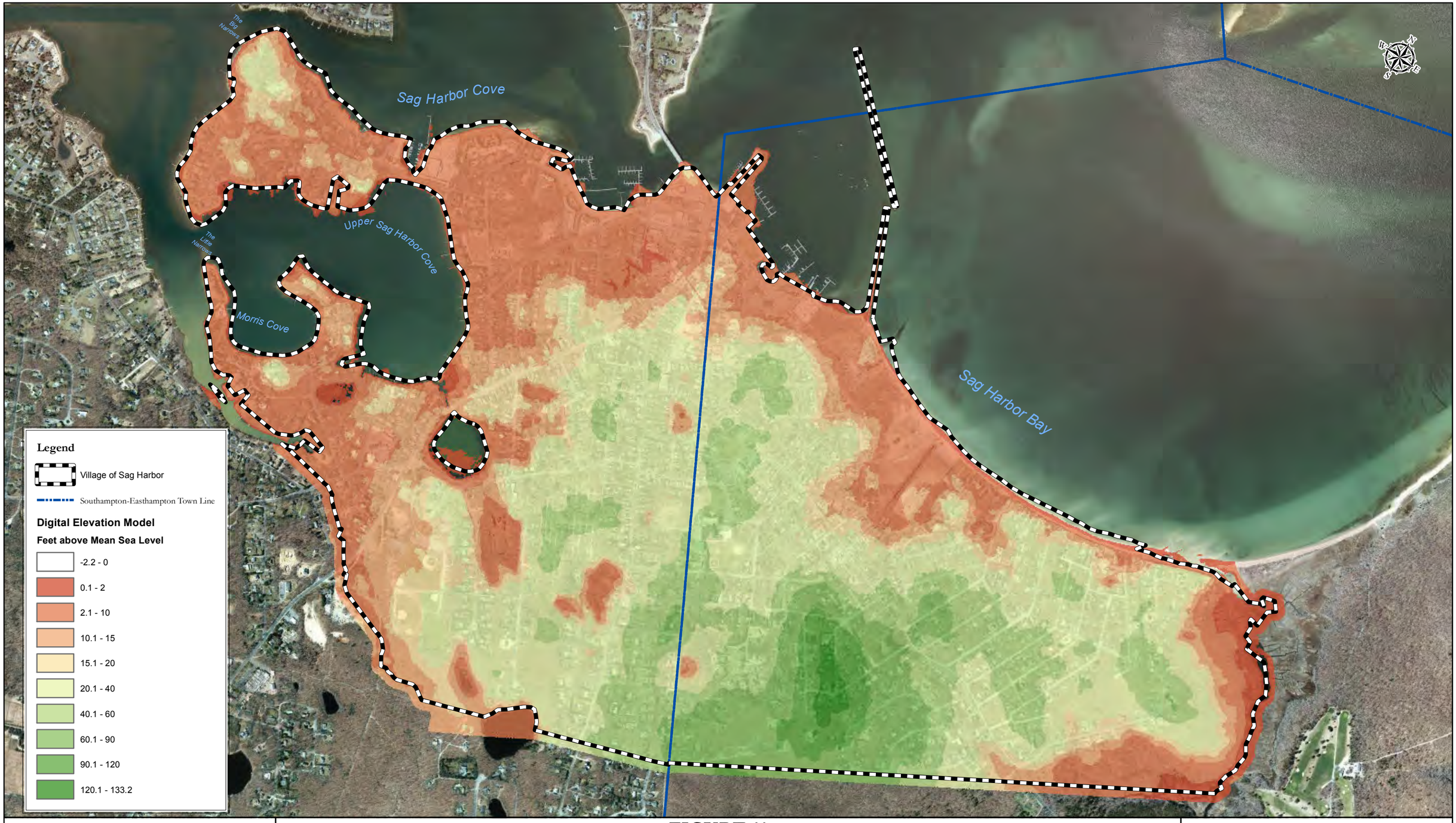


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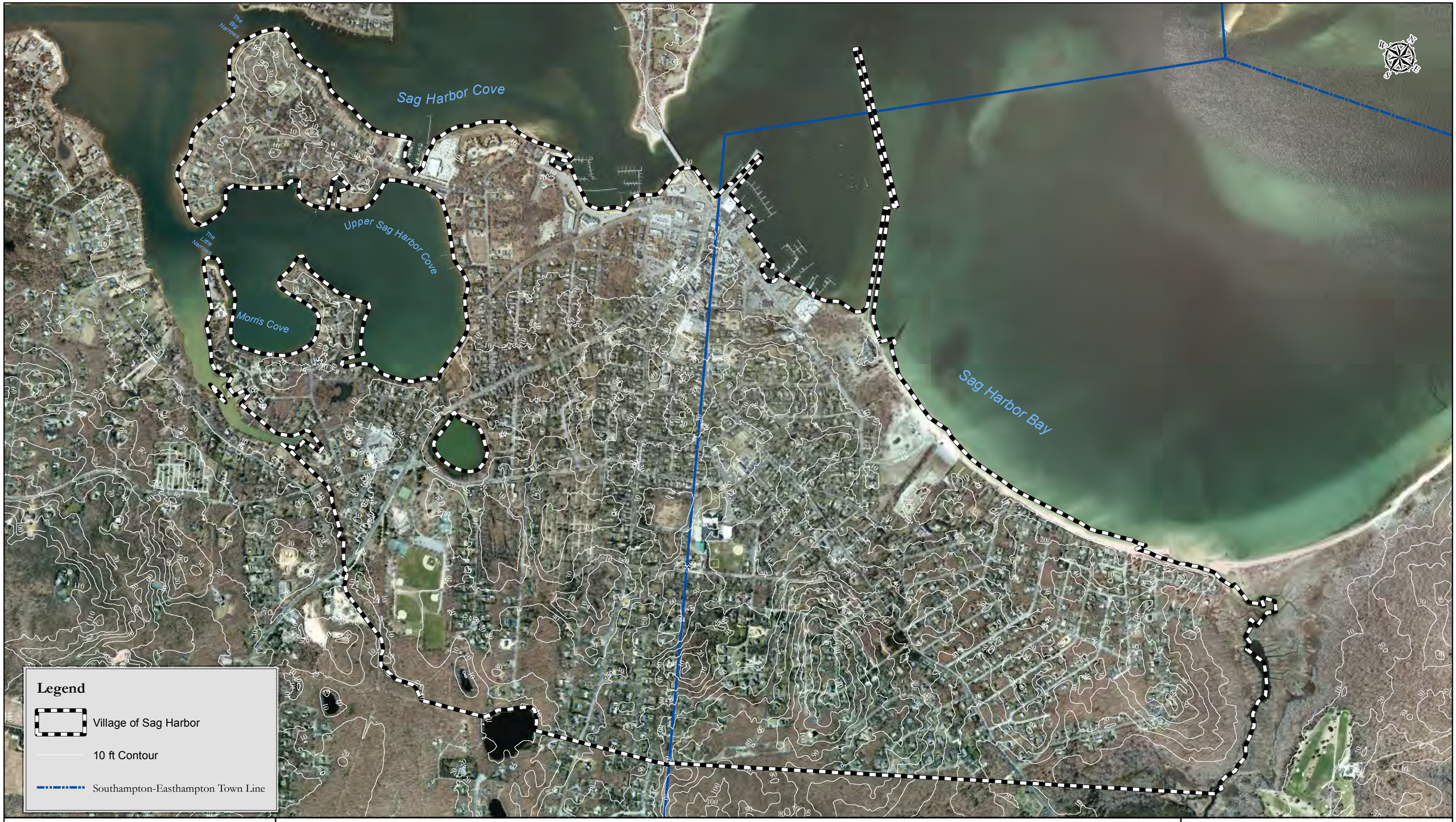
FIGURE 11
TOPOGRAPHY FROM DIGITAL ELEVATION MODEL

Source: NYSGIS Orthoimagery Program, 2013; DEM from FEMA LiDAR of 2006
Scale: 1 inch = 1,000 feet

Village of Sag Harbor



NELSON, POPE & VOORHIS, LLC
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FIGURE 12
TOPOGRAPHIC CONTOURS

Source: NYSGIS Orthoimagery Program, 2013; contours from FEMA LiDAR of 2006
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

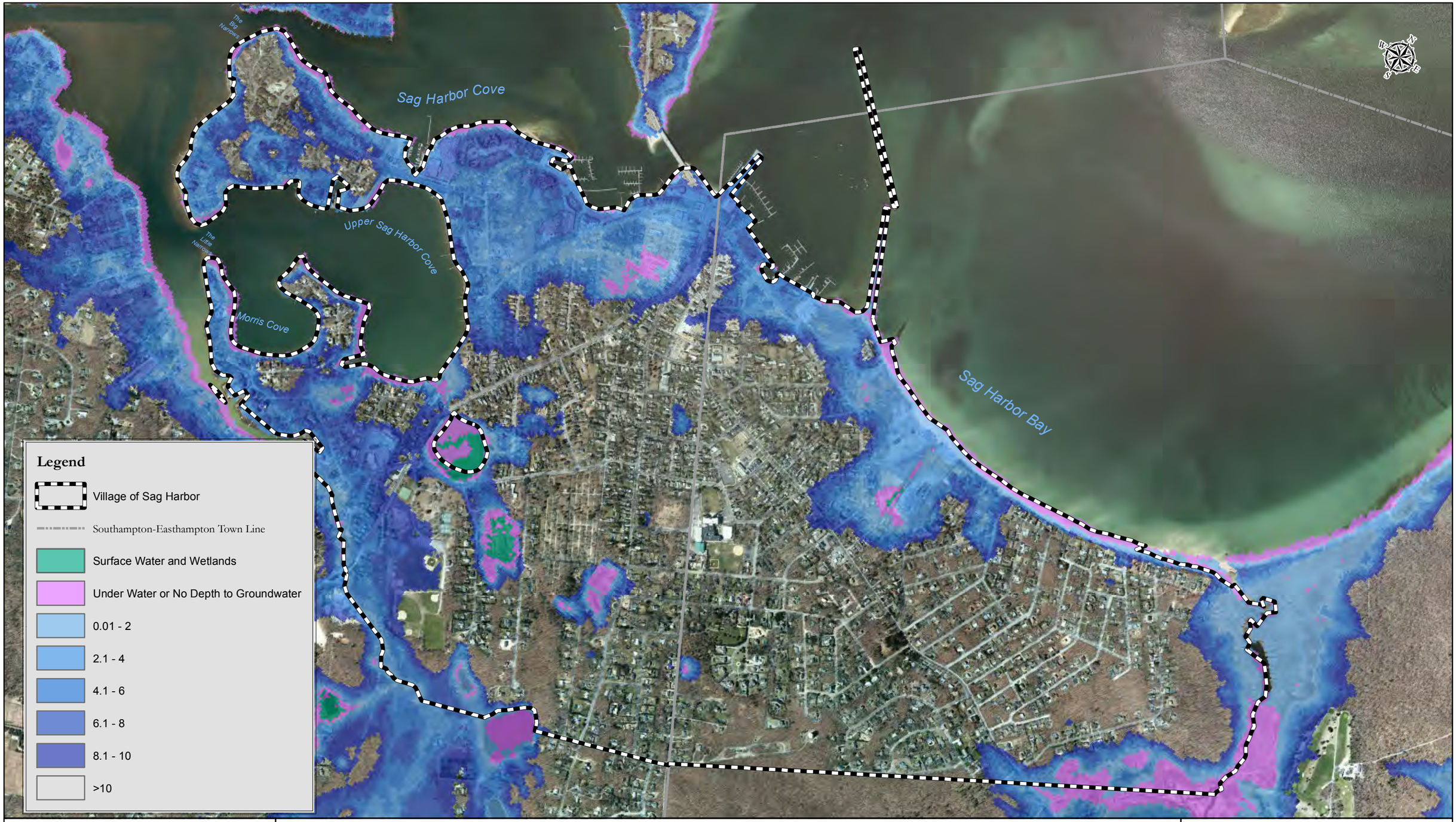

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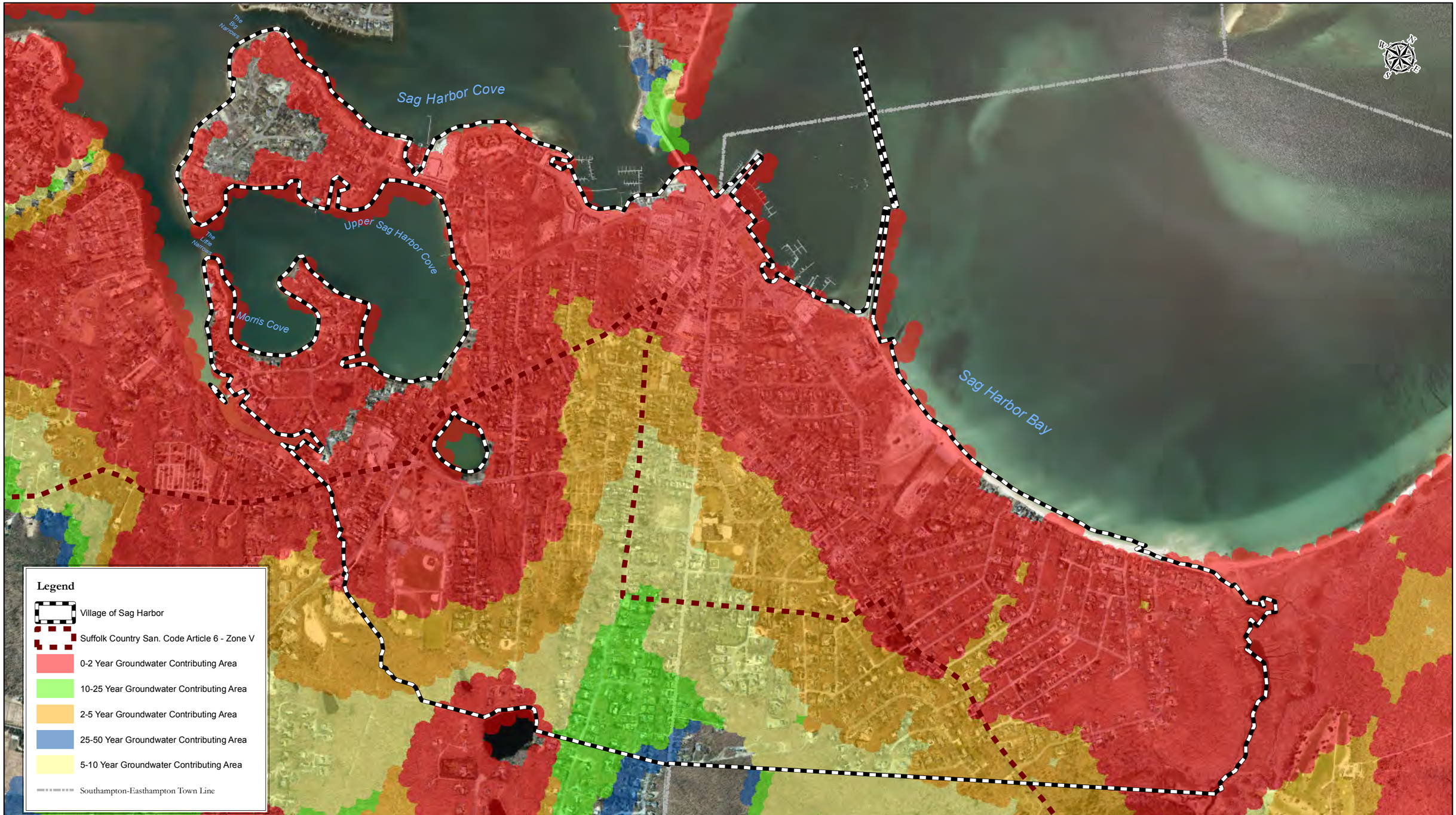
FIGURE 13
DEPTH TO WATER TABLE

Source: NYSGIS Orthoimagery Program, 2013; Water Table from USGS SIM 3270, 2010 data
Scale: 1 inch = 1,000 feet

Village of Sag Harbor



NELSON, POPE & VOORHIS, LLC
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FIGURE 14
GROUNDWATER CONTRIBUTING AREA

Source: NYSGIS Orthoimagery Program, 2013; SCDHS
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

Sag Harbor Cove
Upper Sag Harbor Cove
Morris Cove
Sag Harbor Bay
The Big Narrows
The Little Narrows

Legend

- Sag Harbor Village
- Village Sewer Districts
- Village Sewage Treatment Plants

FEMA Flood Zones

- A
- AE
- OPEN WATER
- VE
- Southampton-Easthampton Town Line

FIGURE 15
FEMA FLOOD ZONES

Source: NYSGIS Orthoimagery Program, 2013; Village of Sag Harbor; FEMA flood zones, 2013
Scale: 1 inch = 1,000 feet

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Village of Sag Harbor

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

FIGURE 16
SEA, LAKE AND OVERLAND SURGE FROM HURRICANES (SLOSH) MAP

Source: NYSGIS Orthoimagery Program, 2013; NYSEMO; FEMA (SLOSH)
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

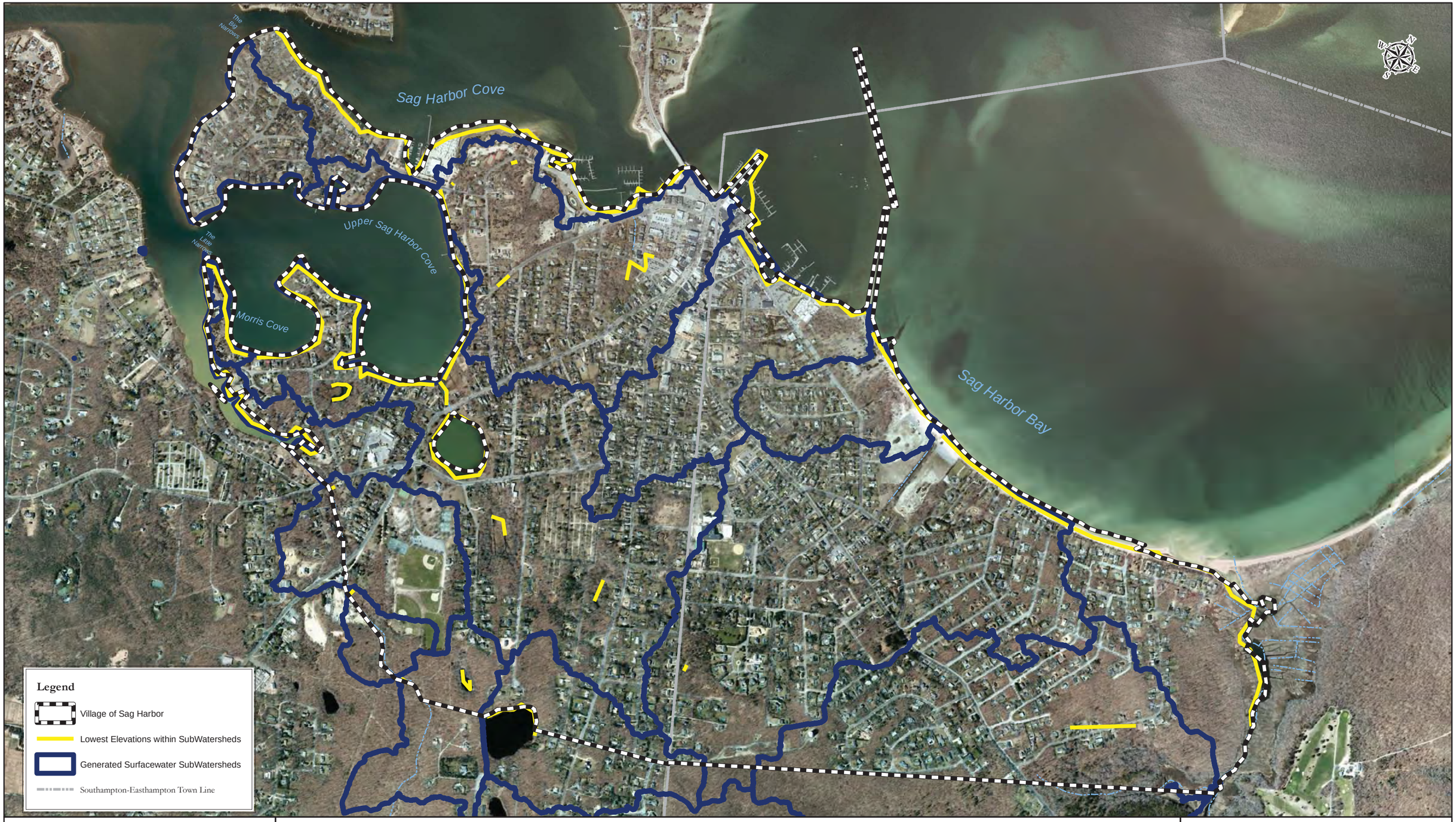

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FIGURE 17
SURFACE WATER WATERSHEDS WITHIN VILLAGE

Source: NYSGIS Orthoimagery Program, 2013;Subwatersheds generated by NP&V from FEMA LiDAR data of 2006
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

NELSON, POPE & VOORHIS, LLC
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FIGURE 18
PUBLICLY OWNED LANDS MAP

Source: NYSGIS Orthoimagery Program, 2013; Village data; includes some underwater land
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

FIGURE 19
HIGH PRIORITY PARCELS

Source: NYSGIS Orthoimagery Program, 2013; Village of Sag Harbor; USGS 2010 SIM 3270; SCDHS - Article 6 Sanitary Code
Scale: 1 inch = 1,000 feet

Village of Sag Harbor

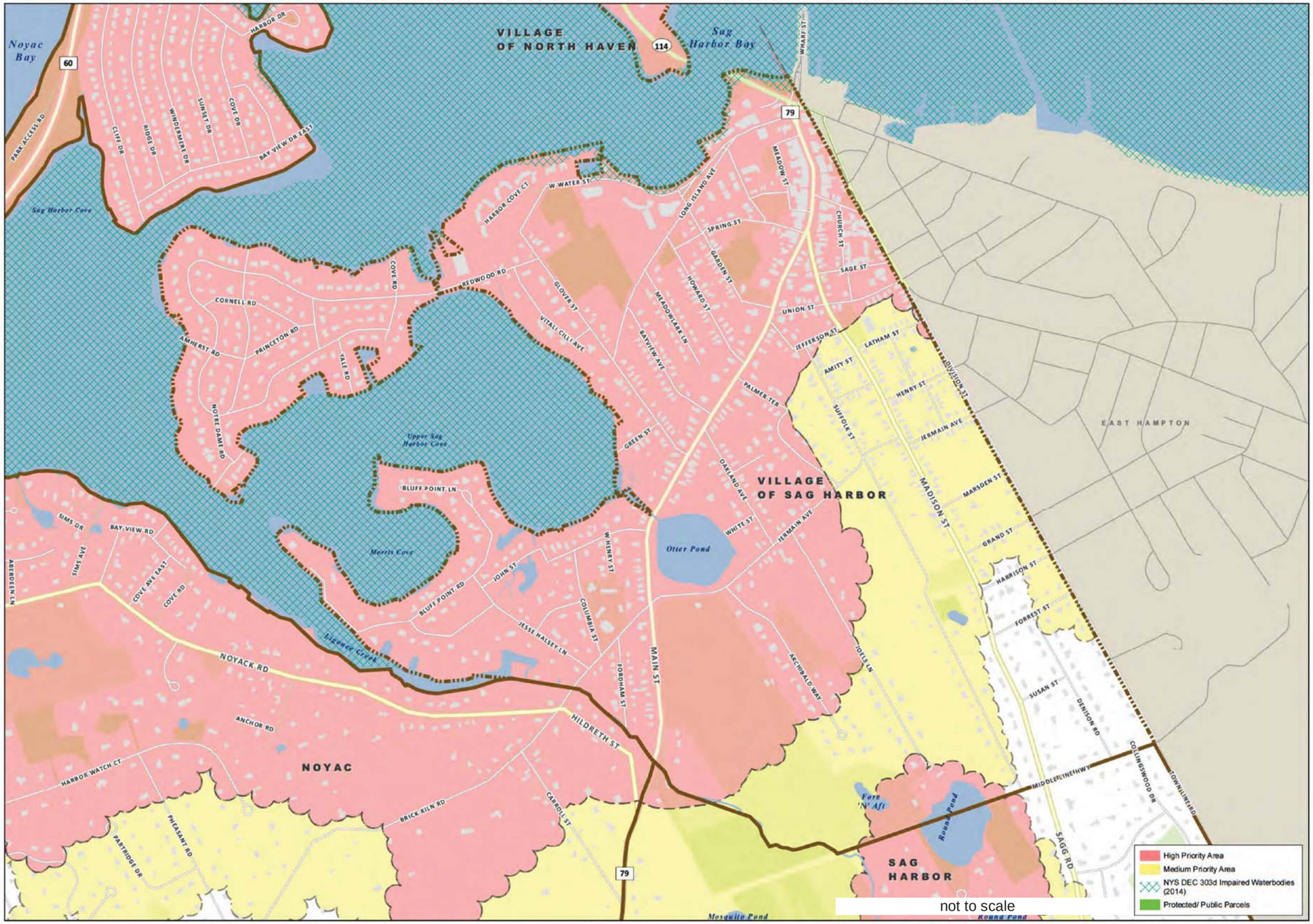
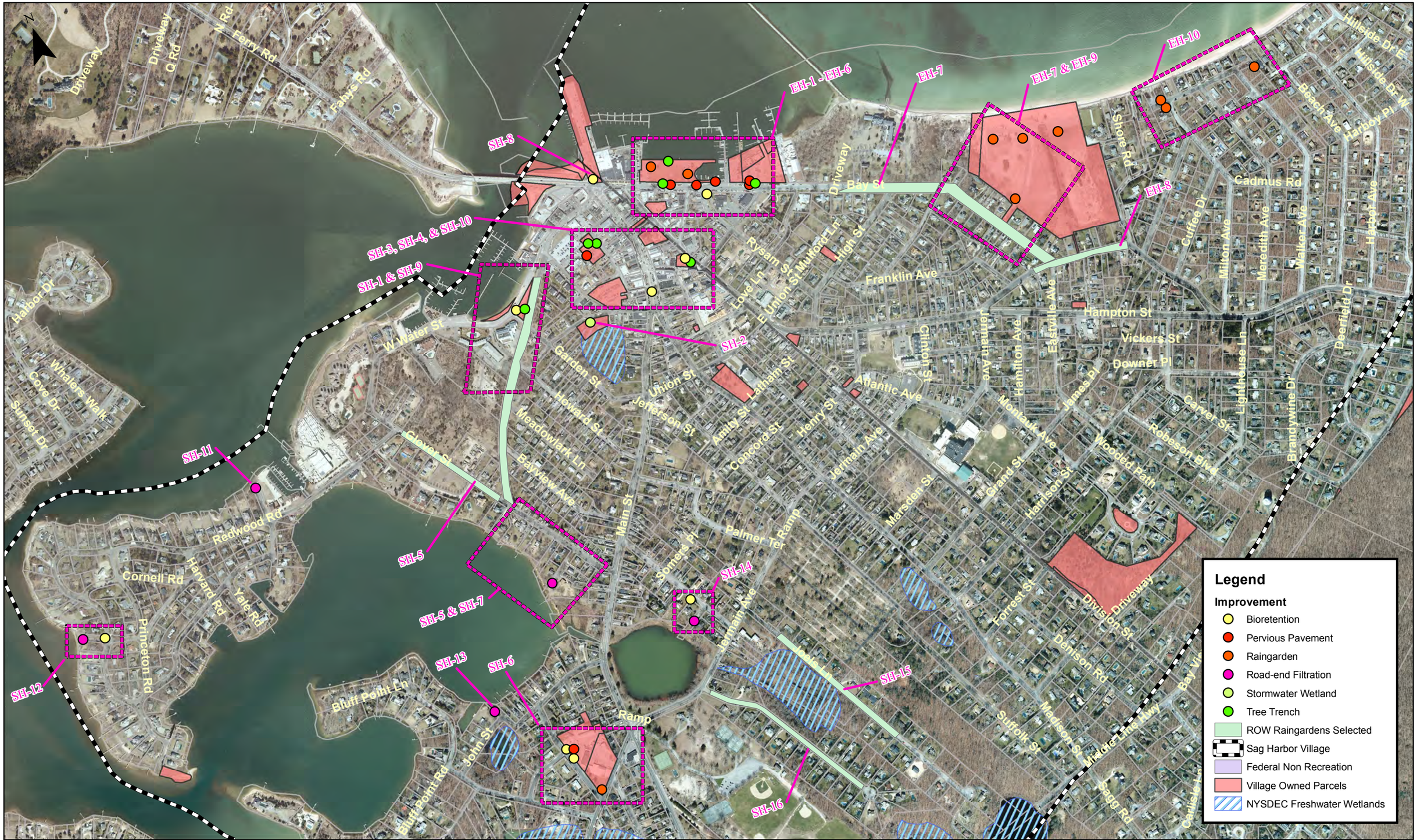


FIGURE 20
SOUTHAMPTON CPF VILLAGE OF SAG HARBOR PRIORITY AREAS

Source: NYSDEC
Scale: not to scale

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

Village of Sag Harbor



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RECOMMENDED WATER QUALTY IMPROVEMENTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 700 feet

VILLAGE OF SAG HARBOR

ATTACHMENTS

ATTACHMENT A
SAG HARBOR VILLAGE
CPF RESOLUTION
AND
LETTERS OF SUPPORT

VILLAGE OF SAG HARBOR

Sandra Schroeder, Mayor
James L. Larocca, Trustee
Ken O'Donnell, Trustee
Beth M. Kamper, Village Clerk

PO Box 660
55 Main Street
Sag Harbor, NY 11963-0015
Tel: 631-725-0222 Fax: 631-725-0316

Robby Stein, Deputy Mayor
Edward Deyermond, Trustee
Eileen Tuohy, Village Treasurer
David J. Gilmartin, Jr., Village Attorney

RESOLUTION No. 6 – JULY 2016

INCORPORATED VILLAGE OF SAG HARBOR RESOLUTION AUTHORIZING THE VILLAGE TO SUPPORT AND REQUEST INCLUSION IN THE TOWN OF EAST HAMPTON AND TOWN OF SOUTHAMPTON CPF WATER QUALITY IMPROVEMENT PLANS

RESOLVED, that the Incorporated Village of Sag Harbor, hereby supports the Water Quality Improvement Plan for the Town of East Hampton and the Town of Southampton; and

BE IT FURTHER RESOLVED, that the Incorporated Village of Sag Harbor, hereby requests the Town of East Hampton and the Town of Southampton to include the Village jurisdiction within in each respective Town's Water Quality Improvement Plan.

Motion Made By: Trustee Larocca
Motion Seconded By: Deputy Mayor Stein

All in favor motion so carried.

Beth M. Kamper, Clerk-Administrator

July 25, 2016

VILLAGE OF SAG HARBOR

Sandra Schroeder, Mayor
James L. Larocca, Trustee
Ken O'Donnell, Trustee
Beth M. Kamper, Village Clerk

PO Box 660
55 Main Street
Sag Harbor, NY 11963-0015
Tel: 631-725-0222 Fax: 631-725-0316

Robby Stein, Deputy Mayor
Edward Deyermond, Trustee
Eileen Tuohy, Village Treasurer

August 4, 2016

COPY

Mr. Jay Schneiderman, Supervisor
Town of Southampton
116 Hampton Road
Southampton, New York 11968

Re: Community Preservation Fund - Water Quality Improvement Projects

Dear Supervisor Schneiderman:

The Village of Sag Harbor is pleased to support the Town of Southampton's efforts to extend the effective date of the Community Preservation Fund (CPF) and to authorize use of a portion of the fund for water quality improvement projects. Southampton water resources are central to the quality of life enjoyed by its residents and to the abundant opportunities for recreation and tourism that the community and its visitors value so highly.

Similarly committed to open space preservation and restoration of its groundwater and surface water resources, the Village of Sag Harbor applauds the Town's efforts to advance watershed management and healthy water quality. The Village's Stormwater Management Program, Wetland Permit Program, Local Waterfront Revitalization Plan (1986; amended in 2006), and Harbor Management Plan (1998) have been primary vehicles through which Sag Harbor coastal resources have been protected for over thirty years. Further, in 2015 the Village joined the Town of Southampton and other Town, County, Village, and State partners in formalizing the inter-municipal Peconic Estuary Protection Committee (PEPC) in order to leverage funds and technical resources in pursuit of effective water quality initiatives.

The Village of Sag Harbor has reviewed the Town of Southampton Water Quality Improvement Project Plan (WQIPP). The following comments are offered in the spirit of joining the Town in achievement of our shared water quality goals.

The Community Preservation Fund, if authorized by the November 2016 voter referendum, will be an important source of funding for wastewater treatment, nonpoint source pollution abatement and pollution prevention projects, all of which are needed to address Sag Harbor nitrogen and pathogens impairments, and to meet TMDL pollutant load reduction goals.

On July 25, 2016 the Village of Sag Harbor Board of Trustees adopted Resolution No. 6 to support the Town of Southampton CPF Water Quality Improvement Project Plan. Funding and implementation of wastewater and stormwater improvement projects in the Village of Sag Harbor can benefit water quality in

the waters of Southampton. Based on historic settlement patterns and existing infrastructure, much of the Village is developed on smaller lots (some of which are in high groundwater areas), and many parts of the Village are not sewered. Consequently, upgrades of sanitary systems and/or installation of new alternative systems once approved by Suffolk County Department of Health Services (SCDHS) would assist in reducing groundwater nitrogen that outflows to surrounding marine waters. Similarly, based on drainage patterns and road systems, there are many opportunities for stormwater improvement projects in the Village that would improve water quality.

The Village of Sag Harbor is appreciative that the Town of Southampton has included the Village in its mapping of CPF Water Quality Improvement Project Plan priority areas and that it has recognized Sag Harbor as a first level of priority stormwater target area.

The Village requests the opportunity to provide further information and to assist the Town with its water resource protection efforts in the Southampton portion (west of Division Street) of Sag Harbor. Development of a Village of Sag Harbor Water Quality Improvement Project Plan (WQIPP) has been initiated. This plan will include mapping of high groundwater, sewered and unsewered areas and lot sizes to assess water quality improvement potential and benefits. The plan will include a full assessment of water quality related conditions in the Village and priority areas for CPF water quality improvement projects will be identified.

We look forward to working with the Town of Southampton on Community Preservation Fund water quality protection and restoration initiatives. Please let me know if you would like additional information at this time.

Sincerely,

Sandra Schroeder

Sandra Schroeder
Mayor

Cc: Harbor Committee
Charles J. Voorhis, CEP, AICP, Planning & Environmental Consultant

VILLAGE OF SAG HARBOR

Sandra Schroeder, Mayor
James L. Larocca, Trustee
Ken O'Donnell, Trustee
Beth M. Kamper, Village Clerk

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Tel: 631-725-0222 Fax: 631-725-0316

Robby Stein, Deputy Mayor
Edward Deyermond, Trustee
Eileen Tuohy, Village Treasurer

August 4, 2016

COPY

Mr. Larry Cantwell, Supervisor
Town of East Hampton
159 Pantigo Road
East Hampton, New York 11937

Re: Community Preservation Fund - Water Quality Improvement Projects

Dear Supervisor Cantwell:

The Village of Sag Harbor is pleased to support the Town of East Hampton's efforts to extend the effective date of the Community Preservation Fund (CPF) and to authorize use of a portion of the fund for water quality improvement projects. East Hampton water resources are central to the quality of life enjoyed by its residents and to the abundant opportunities for recreation and tourism that the community and its visitors value so highly.

Similarly committed to open space preservation and restoration of its groundwater and surface water resources, the Village of Sag Harbor applauds the Town's efforts to advance watershed management and healthy water quality. The Village's Stormwater Management Program, Wetland Permit Program, Local Waterfront Revitalization Plan (1986; amended in 2006), and Harbor Management Plan (1998) have been primary vehicles through which Sag Harbor coastal resources have been protected for over thirty years. Further, in 2015 the Village joined the Town of East Hampton and other Town, County, Village, and State partners in formalizing the inter-municipal Peconic Estuary Protection Committee (PEPC) in order to leverage funds and technical resources in pursuit of effective water quality initiatives.

The Village of Sag Harbor has reviewed the Town's proposed amendment of local law Chapter 112 (Community Preservation) and the ancillary Town of East Hampton Water Quality Improvement Plan (WQIP) and East Hampton Town Comprehensive Wastewater Management Plan (WMP). The following comments are offered in the spirit of joining the Town in achievement of our shared water quality goals.

The Community Preservation Fund, if authorized by the November 2016 voter referendum, will be an important source of funding for wastewater treatment, nonpoint source pollution abatement and pollution prevention projects, all of which are needed to address Sag Harbor nitrogen and pathogens impairments, and to meet TMDL pollutant load reduction goals.

On July 25, 2016 the Village of Sag Harbor Board of Trustees adopted Resolution No. 6 to support and request inclusion in the Town of East Hampton CPF Water Quality Improvement Plan. The Village

requests that the WQIP be revised to specify that Village of Sag Harbor water quality improvement projects are eligible for funding, and that CPF funding is not limited solely to the eight watersheds currently listed in the WQIP, or to the priority locations for septic system upgrades identified in the 2015 East Hampton Town Comprehensive Wastewater Management Plan. (WQIP pgs. 11 and 14.), so as to include the Village of Sag Harbor as an eligible location for future funding of water quality projects.

Funding and implementation of wastewater and stormwater improvement projects in the Village of Sag Harbor can benefit water quality in the waters of East Hampton. Based on historic settlement patterns and existing infrastructure, much of the Village is developed on smaller lots (some of which are in high groundwater areas), and many parts of the Village are not sewered. Consequently, upgrades of sanitary systems and/or installation of new alternative systems once approved by Suffolk County Department of Health Services (SCDHS) would assist in reducing groundwater nitrogen that outflows to surrounding marine waters. Similarly, based on drainage patterns and road systems, there are many opportunities for stormwater improvement projects in the Village that would improve water quality.

Please note that the Town's Wastewater Management Plan incorrectly indicates that the Village's Bay Street sewage treatment plant serves "most of Sag Harbor Village" and that the Village is "predominantly sewered." (July 2016 WMP, p.102; and WMP *Wastewater Needs Analysis Report*, p. 5.) To the contrary, the majority of the Village is not sewered and many on-site wastewater treatment systems are located in areas of high groundwater in proximity to a nitrogen and/or pathogens impaired waterbody.

The Village of Sag Harbor requests the opportunity to provide further information and to assist the Town with its water resource protection efforts in the East Hampton portion (east of Division Street) of Sag Harbor. Development of a Village of Sag Harbor Water Quality Improvement Project Plan (WQIPP) has been initiated. This plan will include mapping of high groundwater, sewered and unsewered areas and lot sizes to assess water quality improvement potential and benefits. The plan will include a full assessment of water quality related conditions in the Village and priority areas for CPF water quality improvement projects will be identified. It is requested that the Village be included in East Hamptons Water Quality Improvement Plan through amendments to the current Town plan, and inclusion of information to be provided by the Village.

We look forward to working with the Town of East Hampton on Community Preservation Fund water quality protection and restoration initiatives. Please let me know if you would like additional information at this time.

Sincerely,

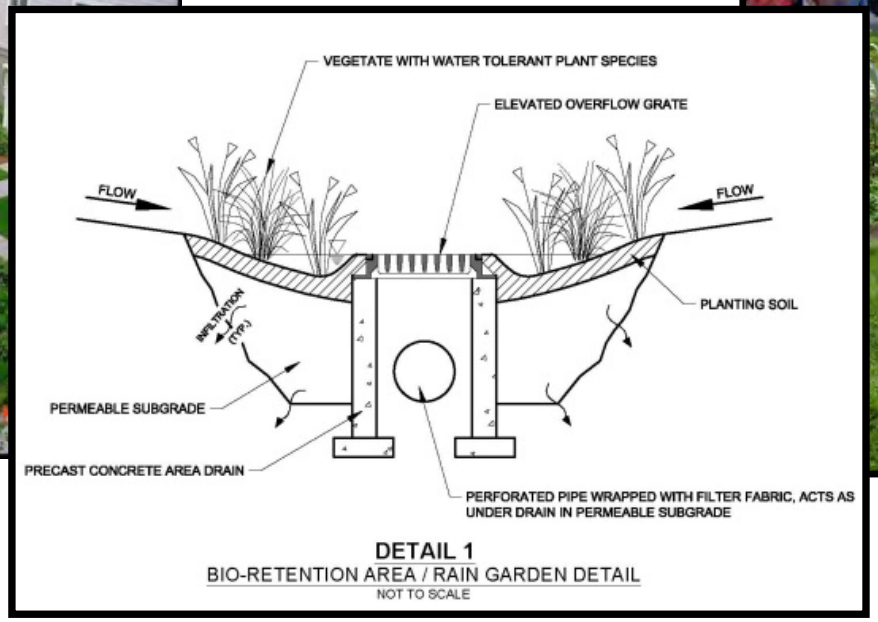
Sandra Schroeder

Sandra Schroeder
Mayor

Cc: Harbor Committee
Charles J. Voorhis, CEP, AICP – Planning & Environmental Consultant

ATTACHMENT B
RECOMMENDED GREEN INFRASTRUCTURE AND STORMWATER CONCEPTUAL DESIGN GUIDELINES

Drainage Improvement Projects - Techniques



- **Bioretention and Raingarden Areas:**
  - Direct stormwater to newly created vegetated areas,
  - Vegetation provides filter for pollutants
  - Allows for infiltration of stormwater prior to overflow

Drainage Improvement Projects - Techniques

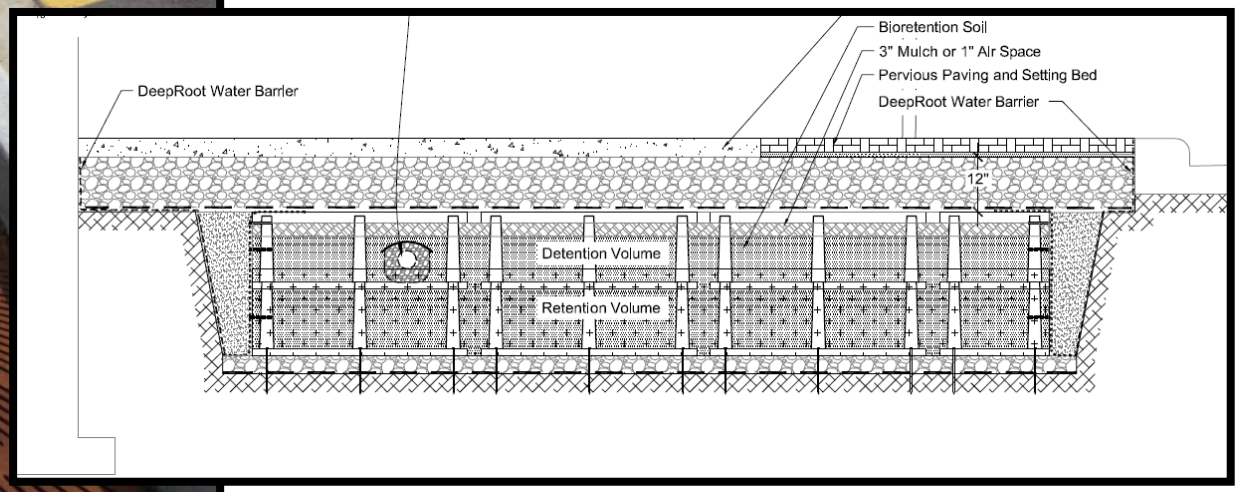
- **Bioretention and Raingarden Areas:**
  - Parking Lot Islands are ideal locations for Bioretention at the Village Parking Lots.

Drainage Improvement Projects - Techniques

- **Right-of-Way Raingarden Areas:**
  - Direct stormwater to newly created vegetated areas,
  - Vegetation provides filter for pollutants
  - Allows for infiltration of stormwater prior to overflow

Drainage Improvement Projects - Techniques

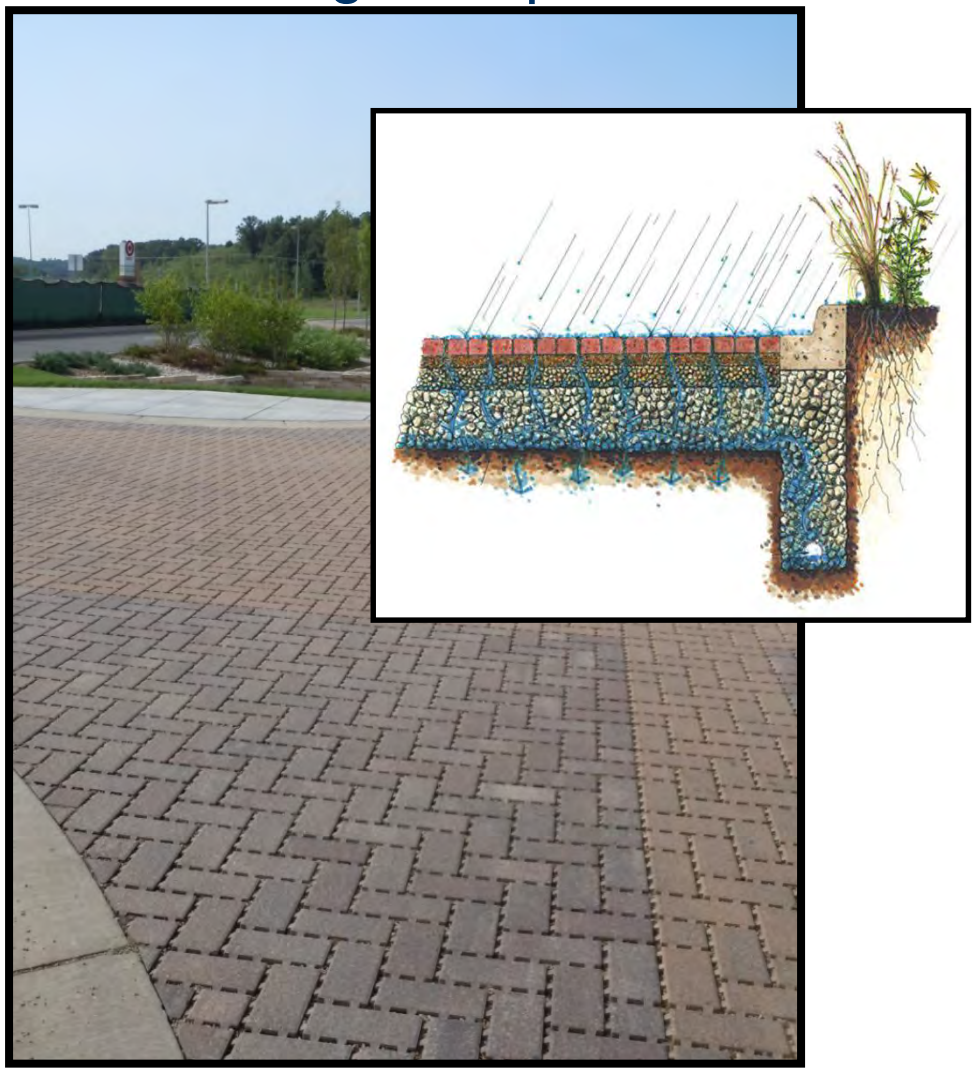
- **Tree Trench:**
  - Direct stormwater to newly created underground trenches
  - Trees provides filter for pollutants
  - Allows for infiltration of stormwater prior to overflow



Drainage Improvement Projects - Techniques

- **Tree Trench:**
  - The small grass area between parking lots or along curbsides make ideal locations for tree trenches.

Drainage Improvement Projects - Techniques



- **Pervious Pavement:**
  - Allows for immediate infiltration & recharge of stormwater
  - Ideal for areas where space is tight

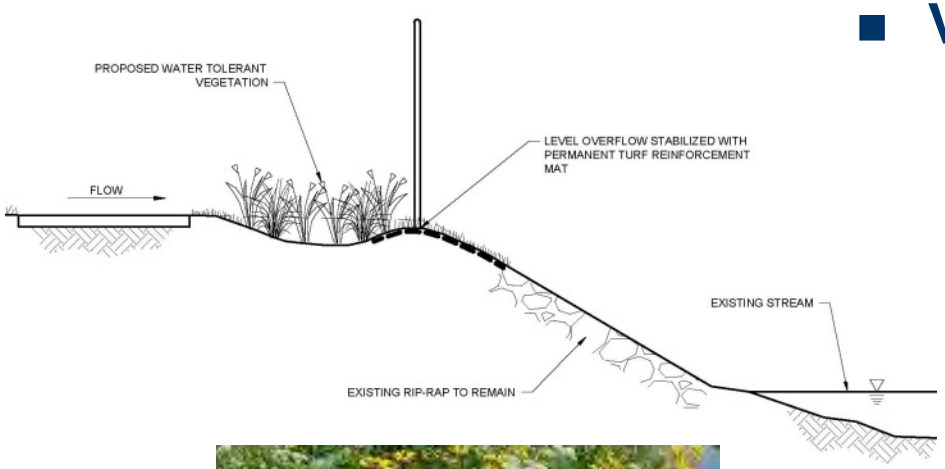
Drainage Improvement Projects - Techniques

- **Pervious Pavement:**
  - Parking Lanes near the harbor would be ideal locations for pervious pavement.

Drainage Improvement Projects - Techniques

- **Low Profile Leaching Systems:**
  - Allows for containment & recharge of stormwater in areas with minimal depth to groundwater
  - Ideal for areas where space is tight

Recommendations – Drainage Improvement Projects



- **Vegetated Fringe:**
  - Provides pollutant removal
  - Can be incorporated as a retrofit to many existing shoreline applications/conditions

ATTACHMENT C
PRELIMINARY PROJECT LOCATIONS AND DIAGRAMS

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: EH 1 - EH 6
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Bay Street Between
Division Street to Burke Street

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: EH 7
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Bay Street and Propect Avenue

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: EH 7A & EH 9
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Bay Street and Havens Beach Road

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: EH 8
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Hempstead Street

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: EH 10
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Terry Drive

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 1 & SH 9
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Long Island Avenue & W. Water Street

VILLAGE OF SAG HARBOR

PROJECTS: SH 2
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Spring Street Wetland

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 3, SH 4, & SH 10
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Downtown Sag Harbor

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 5
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Glover Street

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 5A & SH 7
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Glover Street & Green Street

VILLAGE OF SAG HARBOR

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 6
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

FD & DOT Yard @ Columbia Street

VILLAGE OF SAG HARBOR

PROJECTS: SH 8
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Wharf Street

VILLAGE OF SAG HARBOR

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 11
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 40 feet

Cove Road Road-end

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 12
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 50 feet

Amherst Road Road-end

VILLAGE OF SAG HARBOR

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 13
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 40 feet

John Street Road-end

VILLAGE OF SAG HARBOR

PROJECTS: SH 14
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 80 feet

Oakland Avenue and White Street Road-end

VILLAGE OF SAG HARBOR

PROJECTS: SH 15
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 60 feet

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

Joels Lane

VILLAGE OF SAG HARBOR

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTS: SH 16
CONCEPTUAL PROJECTS

Source: NYS Orthophotography, 2013; Topography from FEMA LiDAR, 2006
Scale: 1 inch = 100 feet

Archibald Way

VILLAGE OF SAG HARBOR

ATTACHMENT D
RECOMMENDED PROJECT IDENTIFCATON AND WATER QUALITY DATA

Village of Sag Harbor - Preliminary Recommended Water Quality Improvement Projects

Project #	Location	Ownership	BMP Type	Impervious Treatment Area (SF)	Size Required - 1" Rain (CF)	Size Required - 1.5" Rain (CF)	Size of Practice (SF)	Volume Captured (CF)	TP (lbs/yr.)	TN (lbs/yr.)	TSS (lbs/yr.)	Bacteria (billion/ yr.)	Runoff (acre-feet/yr.)	Unit Price	Estimated Cost *	Ranking
TOWN OF EASTHAMPTON																
EH-1	Parking along Bay Street	ROW of Village	Pervious Pavement	28,749	2,395	3,593	3,920	7,840	0.4	8.0	481	302	1.4	$20/SF	$78,400	
EH-2	Parking along Bay Street	Village	Pervious Pavement	19,602	1,633	2,450	2,613	5,227	0.6	5.3	328	206	0.6	$20/SF	$52,260	
EH-3	Harbor Park along Marine Park Drive	Village	Tree Trench/Boxes	26,136	2,178	3,267	3,049	4,573	0.6	8.2	164	360	1.8	$20/SF	$60,980	
EH-4	ROW along Bay Street	ROW of Village	Tree Trench/Boxes	12,632	1,053	1,579	1,306	2,613	0.8	4.1	79	174	0.9	$20/SF	$26,120	
EH-5	Harbor Park along Marine Park Drive	Village	Raingardens	5,662	472	707	720	720	0.2	1.7	35	78	0.3	$12/SF	$8,640	
EH-6	SE corner of Bay Street and Rysam Street	ROW of Village	Raingarden	14,810	1,234	1,851	2,000	2,000	0.6	4.8	289	204	0.8	$12/SF	$24,000	
EH-7	ROW along Bay Street	ROW of Village	ROW Raingarden	91,040	7,586	11,380	7,500	7,500	3.3	29.5	1,178	1,255	4.6	$12/SF	$90,000	
EH-8	ROW along Hempstead Street	ROW of Village	ROW Raingarden	54,014	4,501	6,751	4,500	4,500	2.0	17.4	1,056	744	2.7	$12/SF	$54,000	
EH-9	Haven's Beach	Village	Raingardens	23,522	1,960	2,940	3,000	3,000	0.8	7.6	460	324	1.2	$10/SF	$30,000	
EH-10	ROW at corner of Terry Drive & Cadmus Road	ROW of Village	Raingardens	34,848	2,904	4,356	2,500	2,500	1.3	11.3	681	480	1.8	$12/SF	$30,000	

Note: * The cost figures are for preliminary budgetary purposes only. Costs may be more or less depending on the bidding process and local factors. Costs may be reduced through use of in-kind services, if available.

Village of Sag Harbor - Preliminary Recommended Water Quality Improvement Projects

Project #	Location	Ownership	BMP Type	Impervious Treatment Area (SF)	Size Required - 1" Rain (CF)	Size Required - 1.5" Rain (CF)	Size of Practice (SF)	Volume Captured (CF)	TP (lbs/yr.)	TN (lbs/yr.)	TSS (lbs/yr.)	Bacteria (billion/ yr.)	Runoff (acre-feet/yr.)	Unit Price	Estimated Cost *	Ranking
TOWN OF SOUTHAMPTON																
SH-1	ROW along Long Island Avenue	ROW of Village	ROW Raingardens	43,560	3,630	5,445	3,600	3,600	1.5	14.1	852	600	2.2	$12/SF	$43,200	
SH-2	Spring Street wetland	Village	Stormwater Wetland	22,651	1,887	2,831	2,800	2,800	0.8	7.3	442	312	1.2	$12/SF	$33,600	
SH-3	Median of Main Street downtown	ROW of Village	Bioretention	38,332	3,194	4,791	3,000	3,000	1.4	12.4	750	529	2.0	$15/SF	$45,000	
SH-4	Parking lot at Meadow Street and Nassau Street	Village	Bioretention and Pervious Pavement	21,780	1,815	2,722	3,000	6,000	0.8	7.1	425	300	1.1	$20/SF	$60,000	
SH-5	ROW along Glover Street	ROW of Village	ROW Raingardens	78,400	6,533	9,800	6,500	6,500	2.8	25.3	1,532	1,080	4.0	$12/SF	$78,000	
SH-6	FD property along Columbia Street	Village	Bioretention and Pervious Pavement	36,154	3,012	4,519	3,900	5,850	1.2	11.7	706	498	1.8	$20/SF	$78,000	
SH-7	Green Street Road-end	ROW of Village	Road-end Filtration	7,840	1,270	1,905	3,000	3,000	0.0	2.5	153	108	0.4	$10/SF	$30,000	
SH-8	Wharf Street	Village	Bioretention and Tree Trench	15,246	1,270	1,905	1,200	1,800	0.6	4.9	298	210	0.8	$20/SF	$24,000	
SH-9	W. Water Street	Village	Bioretention and Tree Trench	20,473	1,706	2,560	1,700	2,550	0.7	6.6	400	282	1.0	$20/SF	$34,000	
SH-10	Parking lot at Division Street and Washington St.	Village	Bioretention and Tree Trench	7,840	653	980	700	1,050	0.3	2.5	153	108	0.4	$20/SF	$14,000	
SH-11	Cove Road Road-end	ROW of Village	Road-end Filtration	20,473	1,706	2,560	2,100	2,100	0.7	6.6	400	282	1.0	$10/SF	$21,000	
SH-12	Amhurst Road Road-end	ROW of Village	Raingarden and Road-end Filtration	26,572	2,214	3,321	2,300	2,300	1.0	8.6	519	366	1.3	$12/SF	$27,600	
SH-13	John Street Road-end	ROW of Village	Road-end Filtration	12,196	1,016	1,524	1,000	1,000	0.2	2.4	141	100	0.4	$10/SF	$10,000	
SH-14	Oakland Avenue and White Street Road-end	ROW of Village	Bioretention and Road-end Filtration	41,382	3,448	5,172	4,800	4,800	1.4	12.5	745	521	2.0	$12/SF	$57,600	
SH-15	ROW along Joels Lane	ROW of Village	ROW Raingardens	39,204	3,267	4,900	3,300	3,300	1.4	12.6	766	541	2.0	$12/SF	$39,600	
SH-16	ROW along Archibald Way	ROW of Village	ROW Raingardens	33,976	2,831	4,247	2,900	2,900	1.2	10.9	664	468	1.7	$12/SF	$34,800	

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